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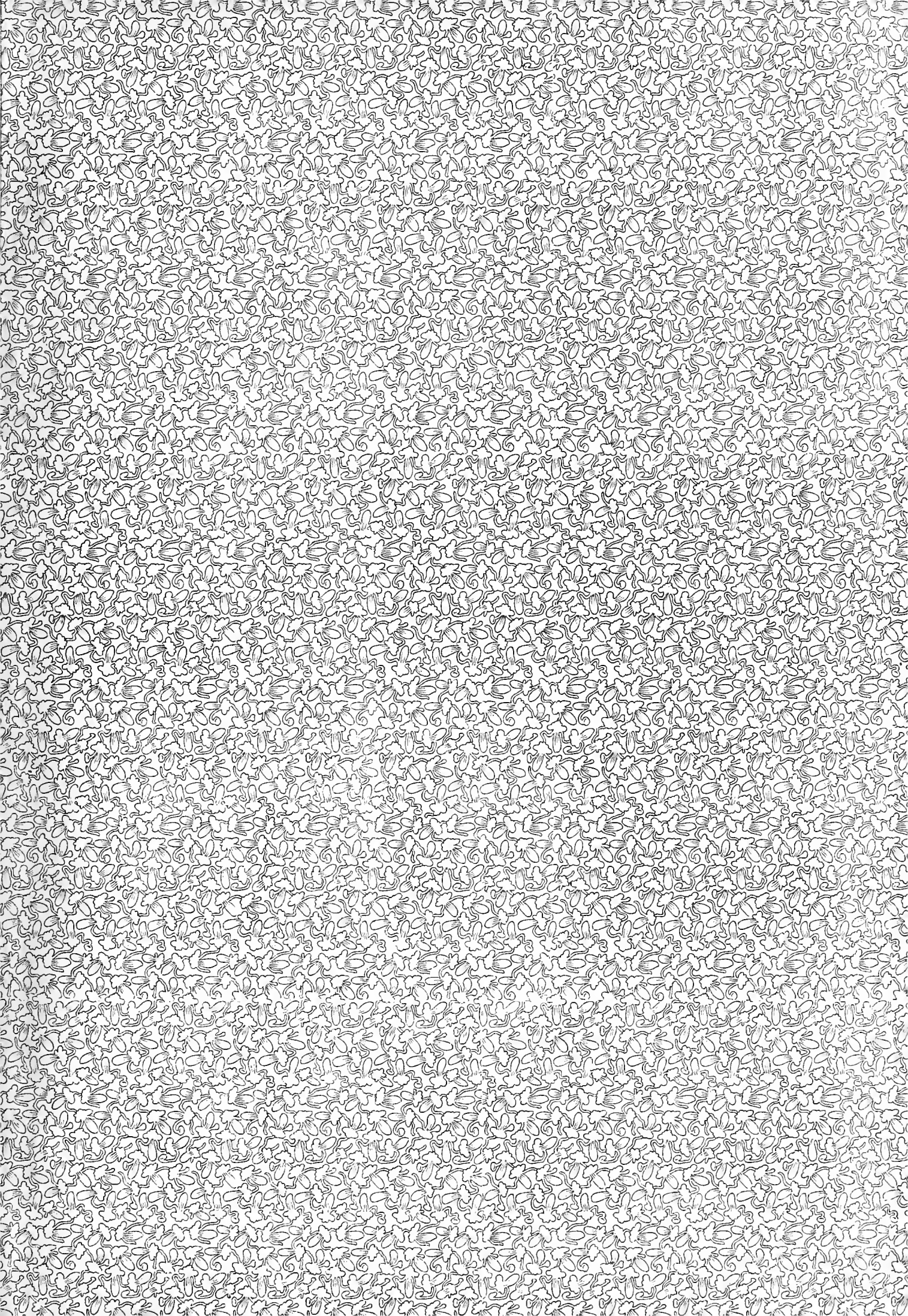
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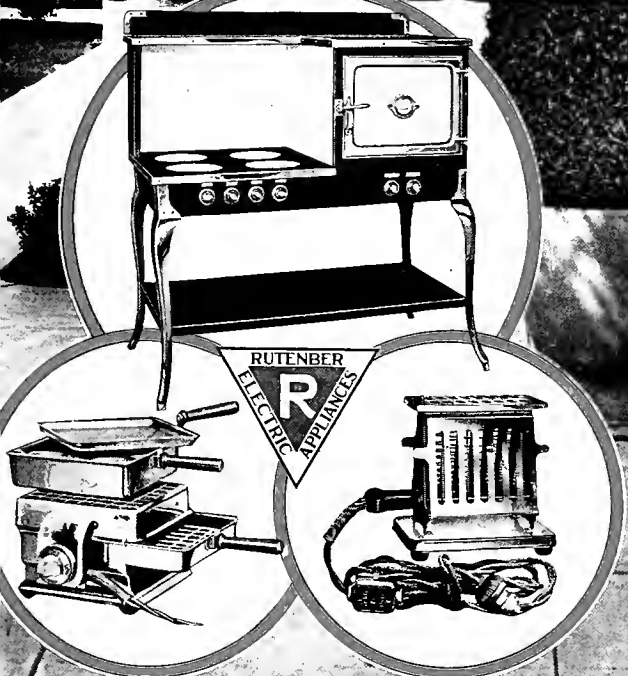
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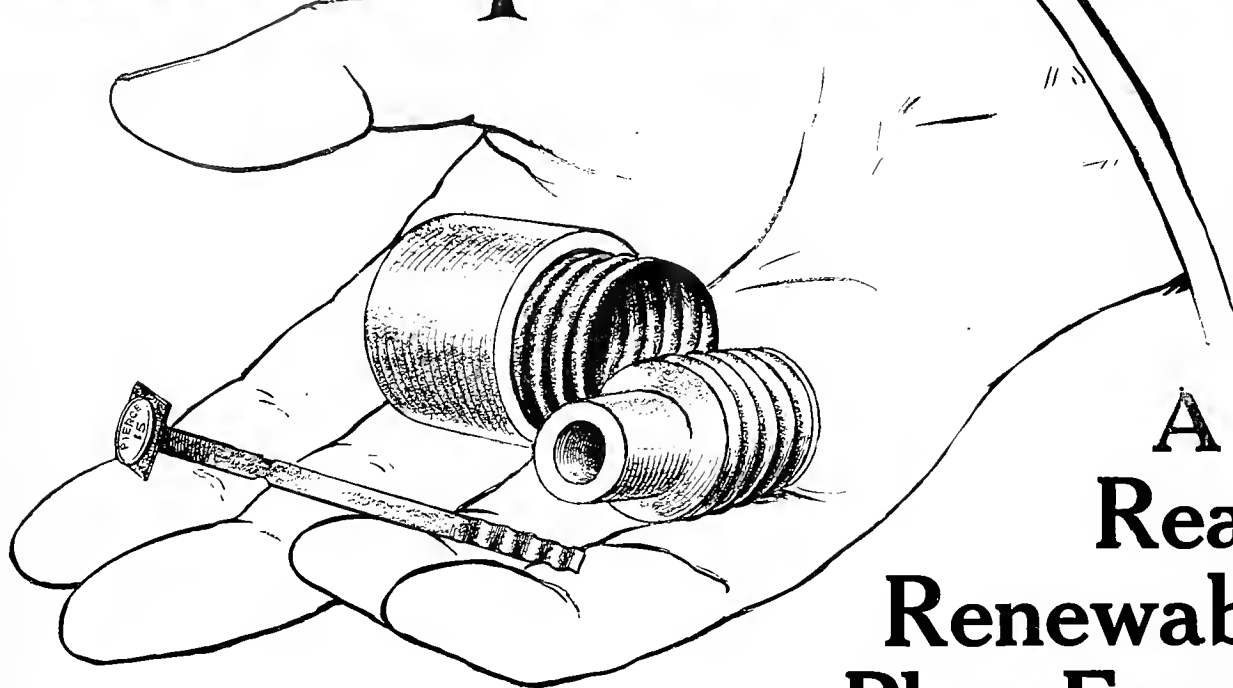
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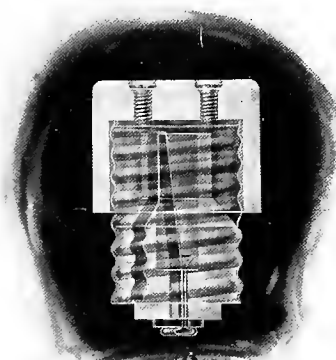
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Journal of Electricity and Western Industry

ROBERT SIBLEY, Editor

A McGraw-Hill Publication

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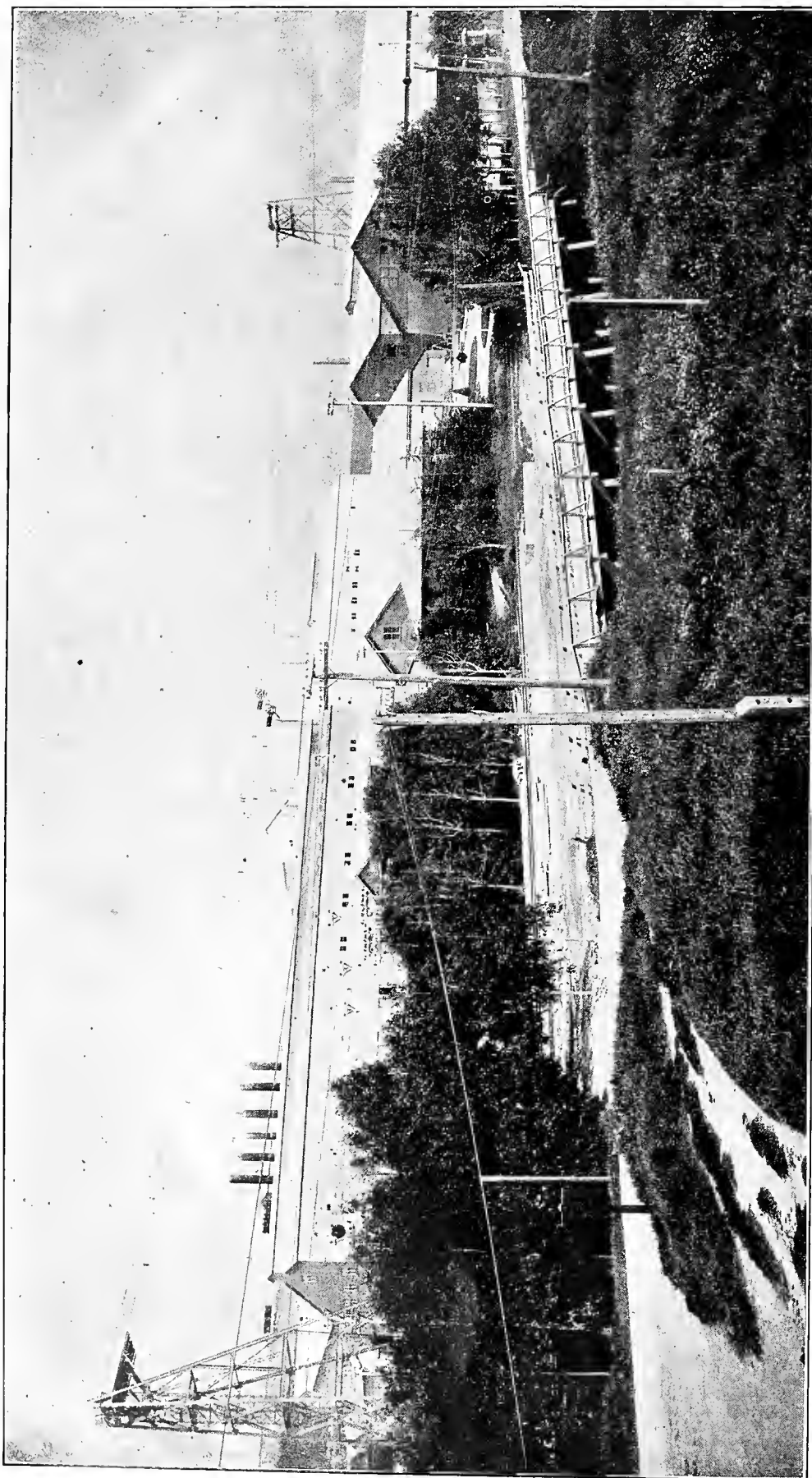
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Journal of Electricity and Western Industry

A publication devoted to the upbuilding of the great industrial West and the countries bordering on the Pacific

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Interpreting Western progress through the application of electric power, light, and heat in industry and in the home

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A POWERFUL DRIVE THAT MADE HISTORY

It was an unusual gathering of notables that assembled at Del Monte, June 10, 1921, to attend the afternoon and evening sessions of the Pacific Coast Industrial Conference held under the auspices of the Pacific Coast Division, N. E. L. A. But even more impressive was the array of facts and figures set forth by leaders of industry in the West. No one could have attended such a gathering without a distinct sense of uplift, and without once again pledging fealty to the West, its wonderful resources and its immediate possibilities for growth and expansion, with the development of its vast water power resources playing the leading role.

By means of the striking charts and figures presented, the audience was enabled to visualize the great drama for which the stage is now set—the new era of the industrial West and the countries bordering the Pacific, which today hold within their bounds two-thirds of the peoples of the earth.

Everyone in attendance went away impressed with the logical sequence of events brought out by the speakers. First the necessity for an understand-

ing of just what water power is and how electrical generation takes place. Next that there have already been established in the harnessing of our Western water powers, an impressive number of world records in engineering, and furthermore that at the present time, these accomplishments, wonderful as they are, are only starting points in the program that is now under way. With this wonder vision still in mind, the audience was next shown the tremendous growth in population that the West is experiencing today, and from governmental census statistics deductions were made as to the necessity for the completion of the power development program of the West, calling for a billion dollars in investment in the next ten year period.

But eloquent as was the appeal of these facts, that which far outweighed every other point was the demonstration of every individual citizen's vital interest in having this great program accorded a hearty support from every quarter. It was a great day for the West, and once again the Pacific Division, N. E. L. A. has added a crowning achievement to its long list of helpful accomplishments.

Two major problems confront the electrical industry at the present time, and on the successful solution of these problems rests the future of the industry. The problems are those of junior financing, or the sale of common stock of the power companies, and the establishing of more friendly relations between the public service industry and the public. Though it may seem that these problems can be solved separately, there is no doubt but that the final solution of the one will automatically bring about the solution of the other. If the public served by a power company has faith in that company and in the future of the territory served by it, the company should have no difficulty in selling the common stock necessary to support the major financing, as it will have the strongest possible argument to present to prospective bond and stock holders.

It is not difficult to arouse civic or community pride, and once communities are assured that they cannot advance any faster than the power companies can generate the power necessary to serve their industries, then they are going to show their community pride by backing up the public service industry, and investing, not speculating, in the common

stock of the company. For with a belief in the future of their community comes the conviction that when the community has prospered and developed to the utmost, and the power company along with it, the common stock will then become proportionately more valuable. However, unless the people of the community have faith in the power company, and understand the full value of the work it is doing, there will be little response to an appeal for financial cooperation. Show the man in the street how he depends upon the electrical industry to help him in his work, and the direct benefit he receives for every horsepower of additional installed capacity. Keep on telling the story, and even if at the end of the year it may not seem to have penetrated his shell, keep on telling the story, for there may be only a tissue paper layer left that will have to be broken through finally to get the message over. It is the cumulative results of a campaign of public information that count, and not the spasmodic spurts put on before a rate hearing or an election.

If the public service industry of the West will go whole heartedly into the fight to establish the electrical industry as a basic and a central industry, and show the public that this talk of the "public be served" is sincere, they will have no difficulty in their

junior financing. The time has come when the future of the electrical industry can be assured provided that the public is taken into partnership, told the truth, and the truth hammered home. The public service industry has nothing to hide, nothing to be ashamed of in their present record and if their purpose is sincere the public will be convinced when made to see that its pocket book is affected when the public service industry is treated unjustly or its development retarded. Then the public will support the public service industry both morally and financially, and the two problems now confronting the electrical industry will be solved simultaneously.

One of the most significant facts brought out in the discussion of the paper on "Convenience Outlets" was the statement that while 75,000 people had inspected the adobe electrical home in Los Angeles, the sixty odd houses that had been built in the same restricted residence tract since the home had closed had only averaged one convenience outlet to the home. While the fault in this case was laid to the "ninety-day" contractor, the fact remains that if the public and the architect had been properly sold on the idea of the convenience outlet this condition would not have existed. The architect, like all professional men, must continually study to keep up with the latest advances in home building, and with the conveniences with which the true home is equipped. It is to the interest of the architect to see that the homes which he designs are fitted with sufficient outlets so that the housewife may make the greatest use of those electric conveniences and labor-saving devices which she has. If when the house is completed the housewife has to stand on a chair to reach the chandelier in each room whenever she wants to use her vacuum cleaner, or has to put her floor lamp in just one place in the living room because that particular corner has the only convenience outlet, she will certainly not be a satisfied customer.

In engineering advance the year just past has proven the most active on record in the West. The outstanding accomplishment is the thorough development through research of a working knowledge necessary to make two-hundred-and-twenty-thousand-volt transmission an economic possibility.

The early stages of long distance transmission met with only simple problems of insulator design. Mechanical strength was soon developed in insulators sufficient to withstand the possibility of puncturing while the design of the exterior surface of the insulator was soon evolved to prevent surface discharges. But the advent of the great two-hundred-and-twenty thousand-volt transmission necessity, gave rise to the stubborn problems of the break down of the air, the establishment of corona phenomena and above all the possible disaster incident to flash-overs of long duration.

Great credit is due Harris J. Ryan of Stanford University for his research contribution to our present day knowledge of such phenomena. By means of this knowledge the electrical engineer is able to design shields for the lower unit on the insulator, thus tending to distribute the strain, as has been done by John A. Koontz in his splendid new insulator design for the 165,000-volt line of the Great Western Power Company, or for the new design brought out by F. G. Baum at the recent convention of the American Institute of Electrical Engineers at Salt Lake City to be used in the 220,000-volt transmission for the Pit River development of the Pacific Gas & Electric Company.

It has indeed been a great year of achievement in long distance transmission of electrical energy, and men of the West may well be proud of the part our electrical engineers have taken in this work; for it is now recognized that three hundred, five hundred—yes, eight hundred-mile transmission is only limited by the economic value of the power in the district to be served.

From the lack of interest shown at the business sessions of the recent convention of the Pacific Coast Division, N. E. L. A., and in the discussion of the papers, it is apparent that something must be done to maintain the interest or awaken new interest in this Association. It is not altogether difficult to understand why this lack of interest exists, for to most members of the National Electric Light Association there are about four things each year which wake them up to the fact that they really belong to the organization. They receive the bulletin from national headquarters each month, the bound Proceedings of the National Convention, the notice of the Convention of their geographic section, and their bill for membership. Something must be done which will keep up the interest of the members so that they may know what the Association is doing. One means of doing this might be to organize subdivisions of the Association in the power companies or in the larger geographic centers of this division. By holding monthly meetings the membership would feel that they were getting something out of the Association and knew somewhat of its problems and activities.

During the past year the committees have been doing good work, and the engineering conclave held by the technical committee in San Francisco this spring awoke the interest of a large number of the engineers in that community. The commercial, public relations, accounting and the other committees have put in a great deal of time, and have accomplished work which has been of the greatest value to the industry, but if the members of the association will not attend the sessions at the conventions to learn of these things, then the only value received is by the members of the committees. If all of the members could be made to serve on all of the committees, and to work and to attend the committee meetings, that would be one solution. In preference

to that extreme, however, the conventions were inaugurated, with an idea that by working intensively for three or four days the results of the year's work could be learned by all of the members. Have we not lost sight of the main idea of the convention?

With the need for buildings and homes it is regrettable that at the present time the lockout of the building trades has been decided upon by the Builders Exchange of San Francisco and other cities in that vicinity. The fight arose through refusal of the trades to stand by their agreement, and while building is at a standstill at the present time, the American plan has been introduced and may lead finally to a solution of the problem. In the meantime the other cities in the West are pushing their building programs, and the returns are indeed encouraging. In the first five months of this year the permits for twelve cities totalled \$74,934,687, and in April the twenty principal cities in the West showed an increase over last year which averaged 24 per cent.

If the West is to go ahead and become the industrial center which it should be, there must be plenty of homes for the workers who will come, there must be a stability of building conditions so that factories and manufacturing plants can be assured, and labor must abide by its agreements. If the West will recognize this, there is no doubt that the problem will be attacked and solved by the Western initiative and daring which have accomplished the seemingly impossible in the past.

Hydraulic cements used two-thousand or more years ago for the production of concrete were far inferior to the Portland cement used today. Yet many of the structures built of concrete by the Romans, for instance, are in a fair state of preservation, while concrete structures built but a few years ago already show signs of deterioration. One naturally wonders why this is true if the answer is not to be found in the quality of the cement. The cement produced today by different cement plants is of very uniform quality and will, under the standard conditions used in testing, give practically identical results for tensile and crushing strength, and yet concrete placed by one contractor will be entirely satisfactory as to durability and that placed by another will not.

The answer lies in the method of mixing and of application. Experience has shown the proportion of sand and rock, more strictly of fine and coarse aggregate, to be mixed with cement for the production of a concrete to be used for a definite purpose. It is also true that the proportion of water to be added has a definite effect upon the strength of the concrete, and this is a fact that is given very little attention by the average contractor. The amount of water added to a given mixture should be but slightly in excess of that required to combine with the cement, a quantity much smaller than that ordinarily

used. Further, there are certain impurities, mostly of an organic nature, that are injurious to the strength of a concrete.

It is therefore advisable for the user of Portland cement to obtain accurate information regarding the proportions of cement, fine and coarse aggregate and water that will give the best results under given conditions, and to follow this advice as closely as possible. It is an economic waste to buy a high-grade product and fail to use it to the best advantage.

The especial significance of the Electrical Home idea as it has been carried out by the electrical industry of the West, cooperating with western real estate firms, lies in the fact that the houses were built to sell and did not represent merely ideal conditions which the modern house owner could not attempt to attain. Recent real estate records reporting the sale of one of the most complete of these houses indicates the practical value of the idea.

On the other hand, the homes as shown were perhaps somewhat more complete than the average householder can afford—and what is more, the real estate firms to a certain extent capitalized the novelty of the idea, with the result that the actual price set upon the house undoubtedly discouraged many. With the idea of showing the need for electrical equipment and its economy in the small household, the electrical industry has now taken one step farther and is about to cooperate with western builders in placing the "electric bungalow" upon the market. The first of these smaller demonstrations will be carried out in the San Francisco bay region some time this fall. The house will be an inexpensive one and the market price, including the electrical installation, will not be in any way prohibitive. It is expected that the psychological effect of this exhibit will be a salutary one and help to place electric equipment where it belongs in the mind of the public along with the practical conveniences of life, rather than among the luxuries.

There have been some pretty pointed attacks made lately concerning the economic value of the electric range.

The Electric Range The arguments are urged that the range is too expensive in first cost, that its cost of installation is unreasonably high and that certain central stations seem to have conscientious doubts as to the profit to be derived from the range load.

When we come right down to fundamental consideration in the discussion of the economic value of the electric range, the careful observer must arrive at the conclusion that the range problem has been attacked in the past with too little breadth of vision.

The public must have relief from present day household drudgery, and it is up to the electrical industry to make good and furnish this relief. It can be done. But only by the broadest considera-

tions can the full economic value of the range be realized. Whole districts of consumers must be mapped out as prospects for the range, since the day of the isolated range is past. Manufacturers, jobbers, central stations, contractor-dealers must all attack the problem from a saturation use even beyond that prevailing in and about Spokane, Wash., where one in every five consumers has a range installed. The merchandising, the servicing and the construction of the distribution layout for the electric range can be made of such proportions as to render the electric range a great economic achievement in present day household economy. Let us then awaken to this responsibility in order that the public may thus get a first-hand appreciation of the sense of responsibility felt by our industry in its service to the people.

The Home Electrical idea, originated by the San Francisco Electrical Development League and the California Electrical Cooperative Campaign, is getting over the completely wired home to the public not so much, it might be said, through the assistance of the contractor-dealer as in spite of his assistance. The call of the hour is for better salesmanship. Would it not be a good plan for the various cooperative leagues of the West to go back to first principles; forget for a season some of the convenience outlet campaigns, some of the efforts put forth to improve advertising, and many of the other excellent things that have been done, and concentrate for a time on increasing the salesmanship of contractor-dealer establishments? The crying need of the hour is to recover again our art of salesmanship, which during the last three years has become almost a lost art.

Let there be established in Los Angeles, San Francisco, Portland, Seattle, and other great cities of the West, a school for electrical salesmanship where men may come in from the city and rural districts, say once a week, learn how to wrap bundles, how to count the change, how to sell something to a customer in addition to what he has come in to purchase, how to dress properly,—and not chew gum; indeed, how to become a salesman in the truest sense of the word. Every dealer who is going to be able to survive in the months ahead will survive because he has acquired the ideal qualities of the salesman. We do not anticipate hard times; only optimism prevails throughout the West; yet any thinking person knows that quality in salesmanship is the call of the hour.

In the importance of its power possibilities the Colorado River ranks well among the foremost of the nation, not excepting Niagara Falls. It would seem that the possibilities of irrigation and power to be derived from the economic control of the Colorado River govern the destinies of much of the undeveloped land of Utah, Arizona, Nevada and California. The question then arises as to how these great potentialities may best

be made a concrete reality for the benefit of man. It would seem that the problem should be viewed not as one of state boundaries but rather as one covering a circular area circumscribed by a five hundred mile radius with the center at the point where the Little Colorado enters the main river. To carry through properly such an undertaking as this, demands the breaking of many world's records in engineering achievement; it demands the building of higher dams; the storing of more water; the transmission of power over greater distances and at higher voltages than ever before. Yet all of these things are well within reach, and sane thinking engineers see in their accomplishment only a reasonable advance in engineering attainment. With the absolute safeguarding of the public interest provided under the recent federal water power legislation, with the control of regulating commissions in the contiguous commonwealths operating at all times in strict conformity with the law, it would seem that the energy and vision of private enterprise may well be given full play in bringing to pass the early development of this power, so that the present generation of empire-builders in the West may bring to fruition for the public good the wonder works they have in view.

Once more the electrical industry in the West has set an example that will without doubt be followed by the Eastern organizations that are seeking for an effective means of getting their story over to the public. The industrial conference held at Del Monte on the last day of the convention of the Pacific Coast division of the National Electric Light Association marked the beginning of a new era in the furnishing of information to the public. The representatives of banking institutions, chambers of commerce and industrial enterprises from all parts of the West listened to the story of the electrical industry, the part it plays in the development of the community, and the plans for its future growth. These visitors saw as never before the necessity of backing up hydroelectric development, and were convinced of the necessity of carrying this story to the people. The representative of one of the large chambers of commerce stated that this story should be carried to all of the chambers of commerce in the state so that the people would be convinced as he had been by the charts and other exhibits. The story was told in simple language, capable of being understood by the man in the street, and it has been given the stamp of approval by those leaders in Western industrial and commercial life. All that remains for the electrical industry to do is to carry this story to the people, as suggested by these leaders, who have been taken into the industry and shown the inside of it. The story has been put together in simple language, it has been approved by the representatives of the people, and if the electrical industry fails to take advantage of this opportunity the fault is their own, for the way to better public relations has been pointed out.

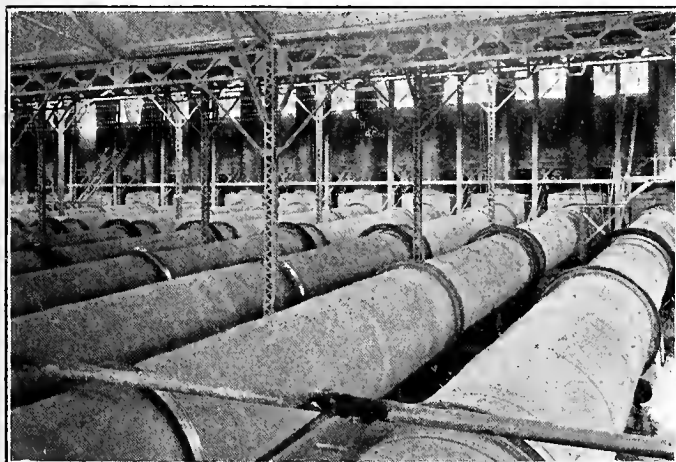
Electrified Cement Industry Aids Western Construction

BY LLOYD W. CHAPMAN

(There is a distinct interdependence between the cement industry and the hydroelectric power industry which is strikingly brought out in the following article. The method of manufacturing Portland cement at the Santa Cruz Portland Cement Company is briefly described, emphasizing this relationship.—The Editor)

One of the most ancient, and at the same time the most modern of construction materials is Portland cement; ancient in the fact that a material of similar composition was used by the Egyptians, the Greeks and the Romans in their buildings, for the construction of aqueducts and even in highways; and modern in the method of its production and in its application to a multitude of new uses. The hydraulic cement of the ancients occurred naturally, was not uniform as to quality, and was difficult to obtain in quantity; the Portland cement manufactured today is of uniform quality, is one of the cheapest as well as the most permanent of construction materials, and is obtainable in an unlimited quantity in all parts of the world. Of the modern construction materials there is none that is as universal in its application. Concrete, a mixture of cement, sand and rock in proper proportions, enters into the con-

struction of the most important of Western engineering projects; it is used in the construction of highways and bridges, for hydroelectric plants and irrigation canals, and enters largely into residence and industrial buildings. In addition there are a multitude of other uses in both urban and rural districts. The West is a larger per capita user of cement than other parts of the country. It is of peculiar interest to note that in the West hydroelectric energy is as essential for the manufacture of Portland cement as is cement for the construction of hydroelectric plants. Cement plants are among the largest customers of the electric utility companies.

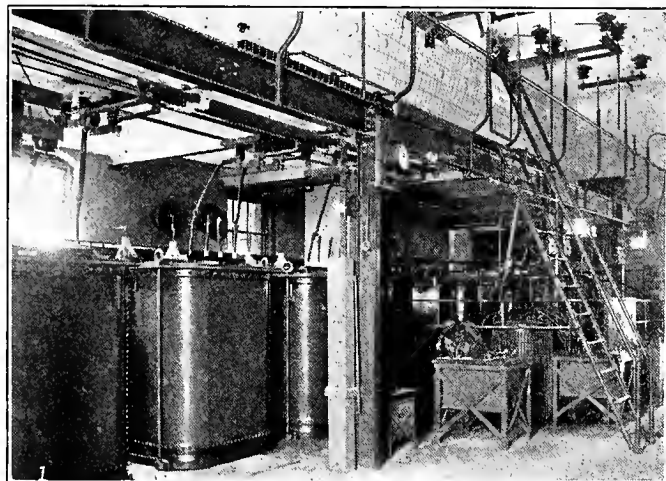


Kiln room in which are located fourteen kilns. One of the kilns is used to dry the sludge obtained from the spray chambers. The kiln gases pass through the stacks at the end of the kiln room thence to the Cottrell treaters.

struction of the most important of Western engineering projects; it is used in the construction of highways and bridges, for hydroelectric plants and irrigation canals, and enters largely into residence and industrial buildings. In addition there are a multitude of other uses in both urban and rural districts. The West is a larger per capita user of cement than other parts of the country. It is of peculiar interest to note that in the West hydroelectric energy is as essential for the manufacture of Portland cement as is cement for the construction of hydroelectric plants. Cement plants are among the largest customers of the electric utility companies.

Essentials in the Cement Industry

The cement industry may be said to consist of the operations of mining, crushing, grinding, and calcining (burning) of argillaceous and calcareous ma-



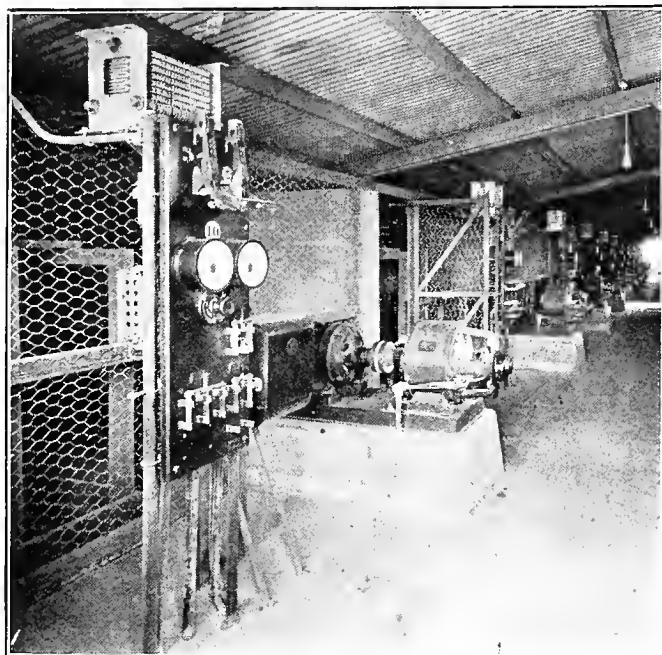
Interior view of the electric substation. Electric Energy is purchased from the Pacific Gas & Electric Company, entering the plant at 60,000 volts and delivered to the plant power lines at 2,200 volts. The uniformity of power supply is an important factor in the operation of a cement plant.

usually in the form of sand, and this is most always contained in the limestone or the clay, or both. Sometimes it happens that a limestone is found containing these three materials in almost the correct proportions to form a good grade of cement, but it is essential that there be a control over the composition at some step in the process and a limestone to which clay must be added is chosen. The greater the proportion of the raw material that can be obtained from one source, the greater the economy in production. Two or three per cent of gypsum is added to the clinker previous to the final grinding, for the purpose of retarding the setting.

An Electrified Western Cement Plant

Of the many Portland cement plants in the West that of the Santa Cruz Portland Cement Company at Davenport, California, is in most particulars typ-

ical. A brief sketch of the various operations as carried out at this plant will indicate the important part that electricity plays in the production of cement. However, in other ways the plant is unique; at present it is the largest cement plant in the West,



Motor generator room for supplying the high tension intermittent direct current for the Cottrell treaters. The high tension current is obtained by transforming alternating current from the generator and then commutating this high tension current into intermittent direct current by means of a rotary contact attached to the shaft of the generator.

the capacity being 7,000 barrels per day, with a grinding, bagging and shipping capacity of 40,000 sacks (10,000 barrels). It also has a most successful plant for the recovery of potash which is contained in the dust and fume from the kilns.

There are at the plant 113 electric motors with a rated capacity of 10,976 horsepower. The peak load is about 4,700 kilowatts and the monthly consumption about two and three-quarter million kilowatt hours. A table is given showing the various motors, their rated horsepower and their use. To a large extent the various pieces of equipment are driven by individual motors.

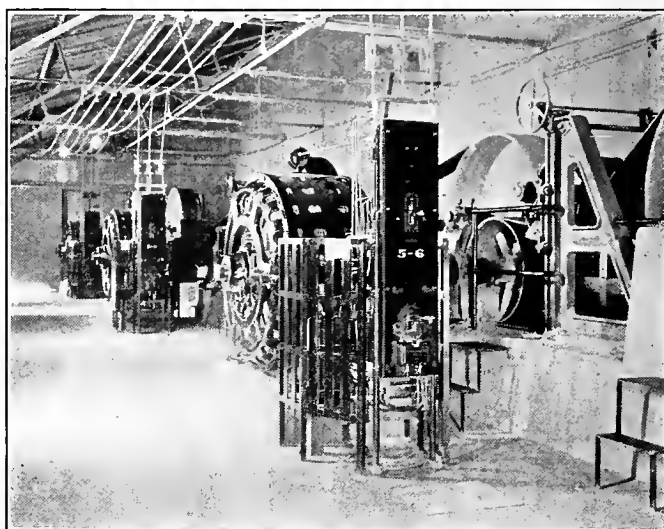
Electric Motors in Use at the Santa Cruz Portland Cement Plant

Number	Hp.	Use	Number	Hp.	Use
2	150	Rock crusher, quarry	1	1	Bag sewing machine
1	250	Williams mill, quarry	1	10	Bag cleaning machine
2	150	Air compressor, quarry	3	250	Air compressor
1	75	Hoist, quarry	1	75	Air compressor
1	20	Bin conveyor, quarry	2	50	Blowers, compres'r room
1	90	Tramway to clay dryer	2	15	Oil pump
1	150	Clay ball mill	1	30	Machine shop
1	40	Clay dryer	1	15	Carpenter shop
1	150	Clay dryer	1	2	Crusher, laboratory
1	39	Rock storage conveyor	1	1/2	Centrifuge, laboratory
1	150	Rock crusher to storage	10	20	Motor generator sets, Cottrell treaters
1	150	Rock dryer, elevator and conveyor	2	5	Motor generator exciters
1	150	Weighing machine	5	30	Exhaust fans, Cottrell treaters
1	75	Kiln room elevator	1	2	Scrapers, Cottrell treaters
5	150	Ball mill, raw mill	1	3	Sludge pump, spray chambers
7	250	Tube mill, raw mill	1	1	Sludge pump, Spray chambers
13	30	Kiln motors	1	40	Circulating pump, Spray chambers
1	15	Kiln for drying mud	1	5	Oliver filter
1	40	Hot clinker elevator	1	30	Oliver filter, vacuum pump
1	150	Clinker skip hoist	1	2	Dorr thickener
1	110	Clinker skip hoist	1	10	Filter cake conveyor
2	150	Conveyor, elevator and dryer, finishing mill	1	30	Dryer for filter cake
9	150	Ball mills, finishing mill			
9	250	Tube mills, finishing mill			
1	150	Packing house, fin. mill			
1	30	Raw material packing			
2	20	Bates packing machines			
1	1	Bag tying machine			

How Electricity Makes Cement

Following the material through the process—there is at the limestone quarry about 850 horsepower in electric motors. The rock is removed by a steam shovel, delivered to two 150-horsepower rock crushers, then to a 250-horsepower Williams mill. It is then hoisted by a 75-horsepower hoist to a storage bin. At the bin a belt conveyor operated by a 20-horsepower motor delivers the crushed rock to cars in which the material is conveyed about three miles to the unloading bins at the plant. From the unloading bins the rock passes through a pair of gyratory crushers to a belt conveyor, which in conjunction with a rock drier that is used only during the wet season, is operated by a 150-horsepower motor. The rock is ground in ten ball mills each pair requiring a 150-horsepower motor. The rock and the clay, which during 1920 was added in the proportion of 58 pounds to 556 pounds of rock per barrel of finished cement, are weighed by an automatic weighing machine operated by a 150-horsepower motor. The mixture is then fed to tube mills for further comminution, there being fourteen tube mills, each pair being operated by a 250-horsepower motor. From the tube mill the finely pulverized material, over 90 per cent passing through a screen having 200 meshes per linear inch, is elevated to bins located at the kilns.

In the kiln rooms there are thirteen kilns, each kiln being 125 feet in length and six feet in internal diameter. The kilns are operated by a variable speed alternating current motor rated at 30 horsepower. A kiln will burn sufficient material to produce somewhat more than 500 barrels of cement per day. The hot clinker from the kilns is elevated to a steel storage bin by bucket elevators driven from a line shaft requiring a 110-horsepower motor. From the bins the clinker is loaded by gravity into seven-ton skips;



One of the two motor rooms in which the electrical equipment for operating the tube mills is located. In each of the two motor rooms there are seven 250 horsepower motors. In two other motor rooms are located fourteen 150-horsepower motors for operating the ball mills. The grinding of the raw material and the clinker consumes the larger part of the power required for the operation of the plant.

the skips are placed on cars so that they may be run under the chute of the clinker storage bins or beneath the cable of the skip hoist. The cable of the skip hoist is 21½ inches in diameter and about

750 feet in length between the steel supporting towers. The hoist is operated by a 150-horsepower motor, and conveys clinker to an out-door storage pile. Beneath the pile are tunnels in which are belt conveyors by means of which the clinker is delivered to the finishing mill and ground to produce the finished cement. The grinding equipment in the finishing mill is a duplicate of that in the raw material grinding department; it consists of twelve ball mills and fourteen tube mills. Each pair of ball mills is operated by a 150-horsepower motor and each pair of tube mills is operated by a 250-horsepower motor. The ground product is ready for sacking and loading.

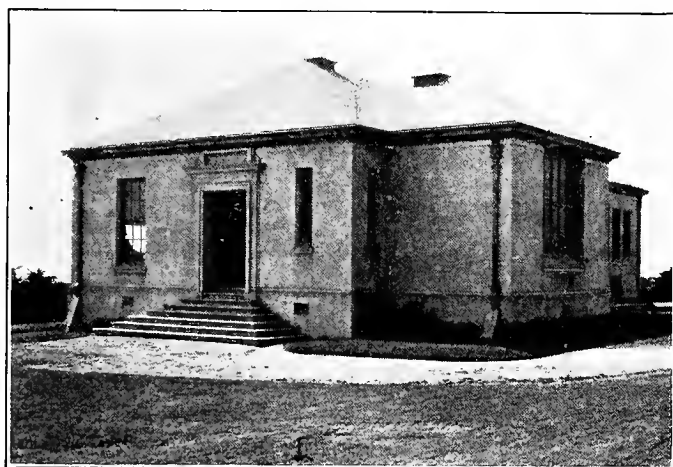
The sacking is done by an automatic machine which fills and weighs the sacks. The sacks are tied at the top of the wire before filling, the cement is forced through a small opening in the seam at one corner of the bottom, the flap of cloth at the seams ingeniously closing the opening when the sack is removed from the filling tube. These machines are called Bates Packers, each is run by a 20-horsepower motor and the two machines have a capacity of 40,000 sacks per twenty-four hours.

Electrical Precipitation Process

One of the most unique applications of electricity is its use in preventing the escape of the kiln dust and fume to the atmosphere. Previous to the use of electrical precipitation, cement plants were notorious for their dust-covered surroundings; this is no longer necessary. The process used is the well known Cottrell method of dust collection. It so happens that the dust escaping from cement kilns is rich in potash, and the recovery of potash received an impetus as the result of the shortage of potash materials during the war. At Santa Cruz the potash is recovered in marketable form. The gases as they leave the kiln consist of the products of the combustion of the fuel oil, carbon dioxide that is liberated from the limestone, dust and fume. The dust and fume both contain potash, but the fume, which is very much finer than the dust, contains a greater percentage. The gases, together with the solids, pass from the kiln to a cross flue and thence down through a spray chamber where water sprays remove practically all the dust, leaving a gas saturated with water vapor, the finest of the dust and the fume. These gases and the solids pass through the Cottrell treater which removes about eighty per cent of the fume, the remainder of the fume and the gases passing to the atmosphere through a stack.

There are several cement plants in various parts of the country equipped with Cottrell treaters for the removal of the fume and dust from the kiln gases, and at some of the plants there is an attempt made at the recovery of the potash contained in the fume. These have been more or less successful, but the one in Davenport is more simple than the others, and, as is usually the case with simple apparatus, is more efficient.

The treater is a rectangular chamber, and a scraper is provided to remove the precipitated fume which falls to the floor of the bin at one end. The



The emergency hospital of the Santa Cruz Portland Cement Company. The hospital is located at a convenient distance from the plant, away from the dirt and noise, and on a promontory overlooking the ocean. The hospital is fully equipped; there are two three-bed wards, an operating room, a dental and medical clinic, kitchen and living quarters for the plant surgeon. It is provided with an individual heating plant and is electrically equipped throughout.

gases are admitted through slots at the sides near the floor, and pass upward between vertical steel plates and out of the treater through narrow slots in the ceiling between the plates. Between the plates, which are about a foot in width, are suspended two nichrome wires that form the negative pole of the high voltage uni-directional intermittent current supplied by the motor generator sets. There is a motor-generator set for each of the ten treaters, each being operated by a twenty-horsepower motor. The high voltage current charges the particles of the fume and these charged particles are carried by the electrical field (or attracted by the pole of the opposite polarity to the particles) and deposited upon the plates, which are grounded and connected to the positive pole of the generator. The fume collects upon the plates until the weight of the accumulation is sufficient to cause it to fall upon the floor of the chamber. The gases and fume are drawn through the apparatus by means of exhaust fans operated by thirty-horsepower motors. The apparatus is therefore under a partial vacuum. To remove the fume from the bins located at the end of the chamber it is necessary to prevent the fume from being drawn back into the chamber by the vacuum. The fume is held in the bin and acts as an air seal; it is removed by means of slowly revolving rollers, these in addition to removing the fume, compact it into thin scales which has the added advantage of reducing the bulk and doubling the amount that can be packed in a sack. About 80 pounds is packed in a sack that holds 94 pounds of cement.

The sludge which is obtained from the spray chambers is decanted in a Dorr thickener and the solid material is dried and returned to the kilns with the feed. The liquid which contains some of the potash is diluted with water and pumped to the spray nozzles. In this way all the potash is recovered in the form of fume from the treaters, about 60 per cent of the potash that enters the plant in the raw materials being recovered in this way. The product contains about 33% K_2O (potassium oxide), is completely soluble in water, and is a very suitable fer-

tilizer, being free from any injurious impurities.

The Labor Problem

In the operation of a manufacturing plant the labor problem is one that must be given a great deal of attention. It is particularly interesting to learn that there are no labor troubles at the Davenport plant. This is not to be attributed to the scale of wages, or to working and living conditions but to the attitude of the management.

Particular attention is also paid to conditions affecting the safety of operation, and there is provided an emergency hospital that in the completeness of equipment and provision for the attention to the hygienic welfare of the worker is unique in connection with small industrial plants. The emergency hospital is provided with an operating room, two wards having six beds, and a complete dental and medical clinic. An experienced surgeon is in constant attendance. The company carries its own insurance and from the point of economy the emergency hospital is a paying investment. However, it is not from this viewpoint that the hospital was established, but rather from a humanitarian motive. As one means of bringing about the contentment of the working force the value of such an investment is incalculable.

The production of cement in the United States has increased from about 65 to about 100 million barrels per year between 1913 and 1920; during the same period the price has increased from about \$1.00 per barrel to about \$2.00 per barrel but the rate of price increase has been more uniform than that of other building materials. In the production of cement the cost of power is an important factor in determining the price, and in the West we have an assurance that the rate for electric power will not materially increase the cost of the product in the immediate future. There is assurance of a continued production of this most important construction material at a reasonable price.

ECONOMICS OF 220,000-VOLT TRANSMISSION

BY J. P. JOLLYMAN

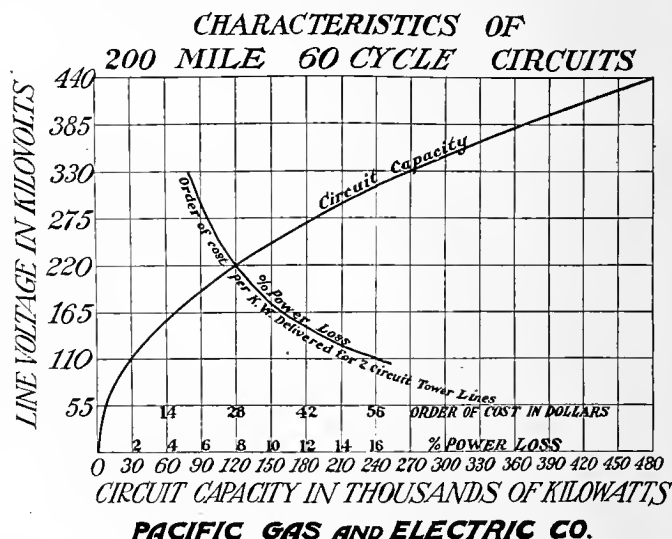
(In working out the most economical voltage to carry to San Francisco the huge blocks of power generated on Pit river, the Pacific Gas & Electric Company had to study a problem that was almost entirely new. The following discussion on the economics of 220,000-volt transmission was presented at a recent meeting of the San Francisco section of the American Institute of Electrical Engineers by the author of this paper, who is the chief of the division of hydroelectric construction and transmission of the Pacific Gas & Electric Company, and chairman of the San Francisco section of the Institute.—The Editor.)

The most important characteristics of 200-mile 60-cycle circuits from an economic standpoint are shown in the accompanying figure. A study of this chart shows the conditions under which a 220,000-volt transmission will be the most economical.

The maximum capacity of an alternating current circuit is largely determined by the voltage consumed by the impedance of the circuit. Assuming that the impedance voltage of a circuit is fixed as a certain per cent of the volts delivered, the maximum capacities of 200-mile 60-cycle circuits are found to

be proportional to the squares of the circuit voltage. A 55-kv. circuit would deliver 7500 kw.; a 110-kv. circuit 30,000 kw.; a 220-kv. circuit 120,000 kw. and a 440-kv. circuit 480,000 kw.

Having established the carrying capacity of circuits of different voltage, and having a certain amount of power such as 240,000 kw. to transmit, the next problem is to determine which voltage will be the least expensive to employ. The cost of transmission includes the fixed and operating charges and the value of the lost power. In comparing the efficiency and cost of circuits of different voltages, the most economical size of copper for each voltage is determined by an application of Kelvin's law. It will be seen that while the capacity of a 220-kv. circuit is four times as great as that of a 110-kv. circuit, the



losses are only half as great and the cost only half as great in the case of two circuit tower lines. It is apparent that 220 kv. is the more economical voltage to employ in the case under consideration.

It might be argued that a higher voltage than 220 kv. would give a still more economical solution, if in fact, such a voltage were possible with apparatus now available. 330 kv. or 440 kv. circuits have capacities so large in comparison with the developments proposed today, that their use does not seem to be warranted even if the possibility of their operation were proven. Another fact to consider in this connection is that the charging kva. is proportional to the square of the voltage and is about one-third the circuit capacity. To operate successfully requires generating units of a size to charge one circuit with one unit. To charge the 220-kv. circuit will require a generator of about 40,000-kva. capacity, a 330-kv. circuit would require a 90,000-kva. generator, and a 440-kv. circuit a 160,000-kva. generator. The latter sizes are far beyond anything thus far attempted, and exceed the total power to be had from any except a very few developments. With properly distributed synchronous condensers it is believed that 220 kv. transmissions can deliver over distances of 400 or even 600 miles with good efficiency and at not prohibitive expense.

220,000 volts appear to be the most economical solution of the larger transmission problems before us at the present day.

Origin and Development of California "Electrical Homes"

BY WALTER F. PRICE

(An increased use of electricity in the home has been found to be absolutely dependent upon an adequate number of convenience outlets. The "Electrical Homes" of California have been tremendously successful in getting over this idea to the public, and the various exhibits to date are here reviewed by the electrical equipment expert for the California Electrical Cooperative Campaign.—The Editor.)

Shortly after the convenience outlet campaign was launched, early in 1920, I began to wonder how a typical new house could be built, completely wired with a liberal number of convenience outlets, and used as an example of a wiring job to be shown to architects and other builders.

Many ideas passed through my mind as I called upon architects and home builders, explaining the many advantages of household appliances and how conveniently they could be used when the house was properly wired with what they then called "base plugs." They nearly all agreed with me that these were fine, but said that the leading builders were only putting in about two "plugs" in their best houses, one for the flat iron and one in the living room, as their clients didn't demand any more because they were not accustomed to using many electrical appliances. They cost too much, etc., so why should they spend any more money for wiring when their clients didn't know the difference.

It then occurred to me that it was necessary to sell the general public the electrical convenience idea so that they would demand more of these "convenience outlets" from Mr. Architect or Mr. Builder when they were buying a new home.

The First Electrical Home

But again the thought ran through my mind: How did I know who was going to buy a new home, and how could they be interested in household electrical appliances? Must I call, individually, upon the three million people of California in order to sell the electrical convenience idea to the home buyer? No. A completely furnished new house, properly wired, located in a desirable tract, and equipped with a complete set of the very latest electrical appliances, would surely single out the prospective home buyers, when properly advertised.

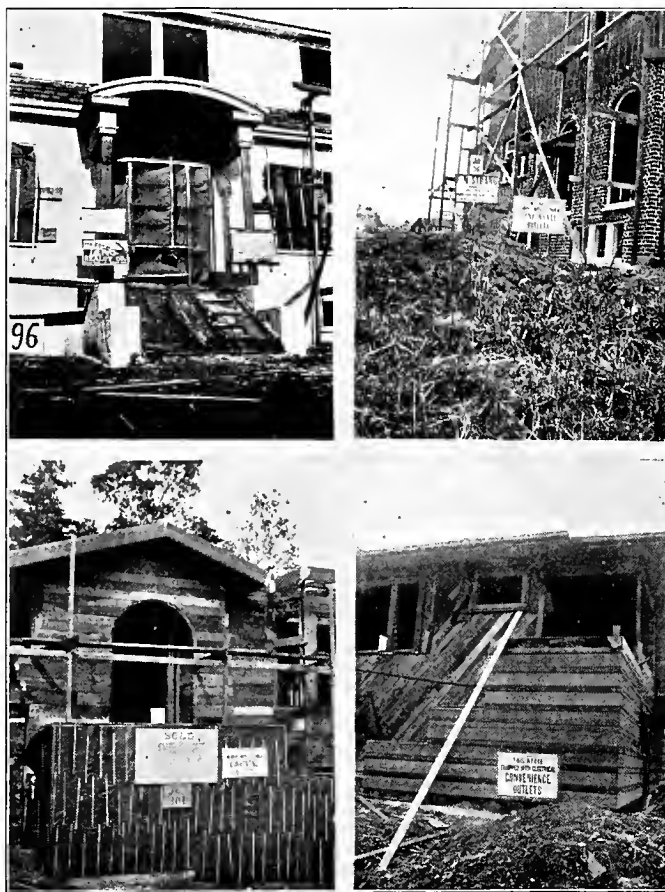
Having surveyed the desirable residence tracts in San Francisco where new homes were being built, I arranged with Mr. Duncan McDuffie, of Mason-McDuffie Company, to build the "Dream Home" in St. Francis Wood. He too, was looking for the prospective home buyer. So the "Modern Electrical Home" had its beginning in St. Francis Wood.

This home was a two-story, eight-room house. It was artistically furnished, ready to live in, completely

wired and equipped with about thirty-one of the latest type electrical appliances. The rugs, furnishings and draperies in this home were executed by L Kreiss & Sons, one of San Francisco's leading furniture houses, who were sufficiently interested from a self-interest viewpoint to install the furniture at their own expense. The electrically operated piano was installed in a like manner by Byron Mauzy, and the electric Victrola by Sherman Clay & Company. The electrical appliances were loaned by the electrical supply jobbers.

Thus the "Modern Electrical Home," the dream of the prospective home buyer, was built and completely furnished, ready for the electrical housewife to receive her guests, without expense

to the electrical industry. It was then highly advertised and opened to the general public on June eleventh, from 10 a.m. to 5 p.m., and continued for seventeen days. Competent demonstrators, drawn from the electrical industry, were on hand in every room to keep the electrical appliances in operation, and demonstrate how conveniently they could be used, just by "plugging in" at any one of the thirty-seven "convenience outlets" that were installed in the home. Approximately twenty thousand interested visitors were shown through the home in this manner. The total advertising expense was approximately five thousand dollars (\$5,000), of which the



Homes under construction, displaying a card reading, "This house equipped with electrical convenience outlets." The card is supplied by the California Electrical Cooperative Campaign only to such builders as are installing one or more convenience outlets in each room.

electrical industry contributed fourteen hundred dollars (\$1,400).

Following a Good Example

It was then decided to carry the "Electrical Home" idea to other cities in California. A similar home was worked out in Sacramento with the J. C. Carly Company. It consisted of a two-story, seven-room house, with 38 convenience outlets, and was open to the public from July 31 to August 15, inclusive, from 1 to 10 p.m. Ten thousand visitors were shown through it. The total advertising expense was approximately eleven hundred dollars, of which the electrical industry contributed five hundred and fifty dollars.

The next Electrical Home was in the Lakeshore Highlands tract, Oakland. It was a two-story, eight-room house, with 38 convenience outlets, and was open to the public from August 26 to September 12, inclusive, from 10 a.m. to 10 p.m. Approximately thirty thousand visitors were shown the "secret of electrical convenience" in this home. The total advertising expense was approximately three thousand dollars, of which the electrical industry contributed eleven hundred dollars.

Los Angeles was next with a one-story, seven-room bungalow in Kenmore Place. There were 28 convenience outlets in this home. It was open for public inspection November 12 to 28, inclusive, from 2 to 10 p.m. Nineteen thousand visitors were shown through it. The total advertising expense was fifteen hundred and fifty dollars, of which the electrical industry contributed eleven hundred and fifty dollars.

The fifth was the Adobe Electrical Home in the New Windsor Square subdivision of Los Angeles. This was a two-story, eight-room house, constructed in Spanish style of sun-baked adobe bricks, with 37 convenience outlets. It was open to the public from January 20 to February 13, inclusive, from 2 to 10 p.m., during which time over fifty-seven thousand visitors were shown through it, at a direct advertising cost of approximately five thousand dollars, of which the electrical industry contributed only eighteen hundred dollars.

When to Exhibit Electrical Homes

Experience has taught us that it is advisable to keep the Electrical Home open for public inspection during the evening, because this is the time when the tired housewife tells her troubles to her husband, and when he has an opportunity to take her out, away from the scene of her daily routine. It may be a trip to the theater, a friend's house, or only an auto ride, but in either case the "Path of Gold" leading from the main boulevard to the electrical home, as shown in the accompanying pictures, will again remind them that there, "Under the Flood Lights," is the place to inspect the dream home with its many conveniences and labor-saving devices that she has so often told him about. And the trip to the theater or friend's house is usually delayed long enough for an inspection of the "Modern Electrical Home." It will give them something new to talk about at their friend's home.

The best cooperation will be obtained from the various exhibitors if the planning and exhibition of the electrical home is carried on under the direct supervision of a neutral organization, such as the California Electrical Cooperative Campaign.

Outlets, Not Appliances

It is not well to do too much actual demonstration of the electrical appliances in the home, as was done in the St. Francis Wood electrical home, because the visitors will usually be more interested in the operation of the appliances than in the convenience outlets, and how convenient it is to plug-in the appliances without disturbing any lights—the primary object of the electrical home. Then too, it will congest the home so that many people will drive by rather than stand in line and wait for a chance to crowd into the house.

A good snappy exhibit, of short duration, with a brief instructive talk in the living room, by one who knows, will put it over most successfully. The visitor must never get the impression from an incompetent demonstrator that the electrical home is an experiment. Questions must be answered intelli-



The "path of gold" leading to the Oakland electrical home served to attract large numbers of evening visitors after the day's work.



The Oakland electrical home at the end of the "path of gold."

gently and quickly so that there will be absolutely no delay on busy days. Demonstrators must also understand, and so inform the guests, that the appliances in the home were merely borrowed for the occasion and that similar appliances can be seen at any of the electrical stores where a more complete demonstration may be secured. The Electrical Home is not an appliance sales room.

To accommodate the crowd of visitors on the last day on which the Adobe Electrical Home was open for inspection, it was found necessary to remove the front and back doors from their hinges, when nearly seven thousand people were shown through the home. Over five thousand were passed through the front doorway between 2 and 5:30 p.m. All were told the story briefly as they passed through the living room and no appliances were in motion to detract from the purpose of the exhibit, the "Secret of Electrical Convenience."



The adobe electrical home at Los Angeles, floodlighted by night.

Among the recent devices for advertising the convenience outlet both among builders and home buyers is a large black and white card supplied to builders by the California Electrical Cooperative Campaign for use on homes under construction. It reads:

**THIS HOUSE
EQUIPPED WITH ELECTRICAL
CONVENIENCE
OUTLETS**

and is furnished only for houses in which the builder is installing one or more convenience outlets in each room. These cards help the real estate company to sell the houses, and stimulate other builders to put in more convenience outlets.

Carrying On the Good Work

A group of "Modern Electrical Bungalows" is now being planned in San Francisco, and another in Oakland, so that the popular electrical idea will not be allowed to die in California.

CONVENIENCE OUTLETS

OLD HOMES

	State of California	S. F. City & Co.	L. A. Dist.	Oakland Dist.	San Diego Dist.	Fresno Dist.
Present homes in	630,000	101,335	173,468	68,835	22,450	41,968
Average 2 convenience outlets at \$2.00 each.....	\$ 2,520,000	\$ 405,340	\$ 693,872	\$ 275,340	\$ 89,800	\$ 167,372
Number of convenience outlets recommended—20 at \$2.00 each.....	\$25,200,000	\$ 4,053,400	\$ 6,938,720	\$ 2,753,400	\$ 898,000	\$ 1,678,720
Loss by not encouraging sufficient number of convenience outlets.....	\$22,680,000	\$ 3,648,060	\$ 6,244,848	\$ 2,478,060	\$ 808,200	\$ 1,510,848

NEW HOMES

	130,000	20,267	34,694	13,767	4,490	8,394
New homes required in.....	130,000	20,267	34,694	13,767	4,490	8,394
20 outlets per home at \$5.00 each.....	\$13,000,000	\$ 2,026,700	\$ 3,469,400	\$ 1,376,700	\$ 449,000	\$ 839,400
2 outlets per home at \$5.00 each.....	\$ 1,300,000	\$ 202,670	\$ 346,940	\$ 137,670	\$ 44,900	\$ 83,940
Possible additional outlet business.....	\$11,700,000	\$ 1,824,030	\$ 3,122,460	\$ 1,239,030	\$ 404,100	\$ 755,468

THE EFFECT UPON LABOR

OLD HOMES

	State of California	S. F. City & Co.	L. A. Dist.	Oakland Dist.	San Diego Dist.	Fresno Dist.
Present homes in.....	630,000	101,335	173,468	68,835	22,450	41,968
Average 2 outlets each, Labor's revenue 50c. each.....	\$ 630,000	\$ 101,335	\$ 173,468	\$ 68,835	\$ 22,450	\$ 41,968
If homes had 20 outlets each, Labor's revenue 50c. each.....	\$ 6,300,000	\$ 1,013,350	\$ 1,734,680	\$ 688,350	\$ 224,500	\$ 419,680
Loss to Labor, by not encouraging sufficient outlets.....	\$ 5,670,000	\$ 912,015	\$ 1,561,212	\$ 619,515	\$ 202,050	\$ 377,712

NEW HOMES

	130,000	20,267	34,694	13,767	4,490	8,394
New homes required in.....	130,000	20,267	34,694	13,767	4,490	8,394
20 outlets per home, Labor's revenue \$1.00 each (today's costs).....	\$ 2,600,000	\$ 405,340	\$ 693,880	\$ 275,340	\$ 89,800	\$ 167,880
Only 2 outlets per home—Labor's revenue at \$1.00 each.....	\$ 260,000	\$ 40,534	\$ 69,388	\$ 27,534	\$ 8,980	\$ 16,788
Possible additional revenue to Labor.....	\$ 2,340,000	\$ 364,806	\$ 624,492	\$ 247,806	\$ 80,820	\$ 151,092

ELECTRICAL APPLIANCES

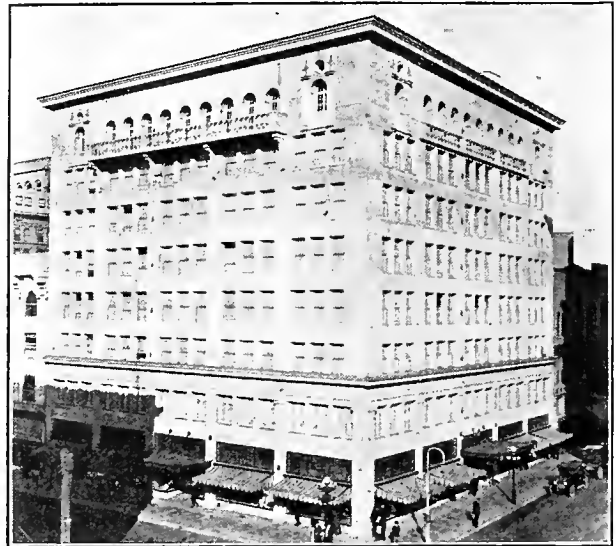
	State of California	S. F. City & Co.	L. A. Dist.	Oakland Dist.	San Diego Dist.	Fresno Dist.
Present homes in.....	630,000	101,335	173,468	68,835	22,450	41,968
New homes required	130,000	20,267	34,694	13,767	4,490	8,394
Average investment in present homes for electrical appliances.....	\$ 150	\$ 150	\$ 150	\$ 160	\$ 150	\$ 150
Investment required to electrically modernize home.....	\$ 750	\$ 750	\$ 750	\$ 750	\$ 750	\$ 750
Prospective sales in old home.....	\$ 600	\$ 600	\$ 600	\$ 600	\$ 600	\$ 600
Total for present homes @ \$600 each.....	\$378,000,000	\$ 60,801,000	\$104,080,800	\$ 41,301,000	\$ 13,470,000	\$ 25,180,800
Total for new homes @ \$750 each.....	\$ 97,500,000	\$ 15,200,250	\$ 26,020,500	\$ 10,325,250	\$ 3,367,500	\$ 6,295,500
Total (prospective business)	\$475,500,000	\$ 76,001,250	\$130,101,300	\$ 51,626,250	\$ 16,837,500	\$ 31,476,300

Six Months of Building Activities in the West



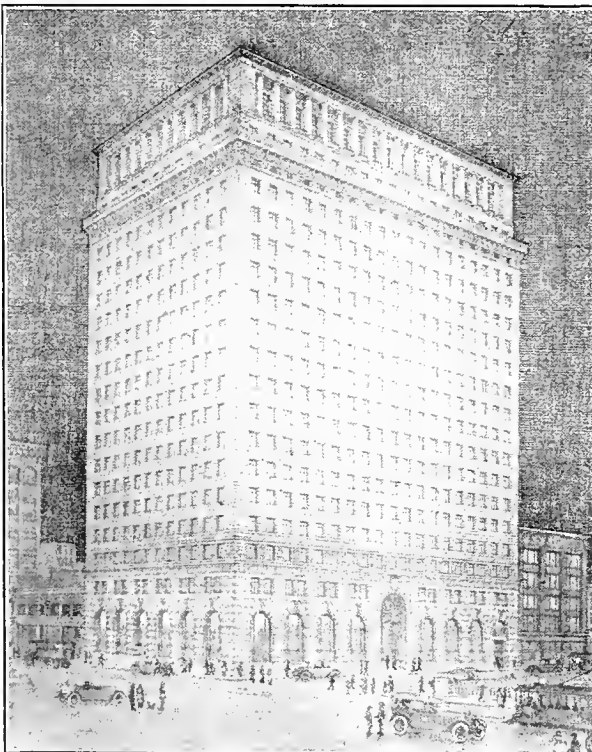
DENVER

The United States National Bank building which was completed this year is typical of the building activity in the "mile high" city. Over three and one half million dollars in building permits have been granted there up to June first, and the electrical co-operative league which has been started will insure the proper interest in lighting and convenience outlets.



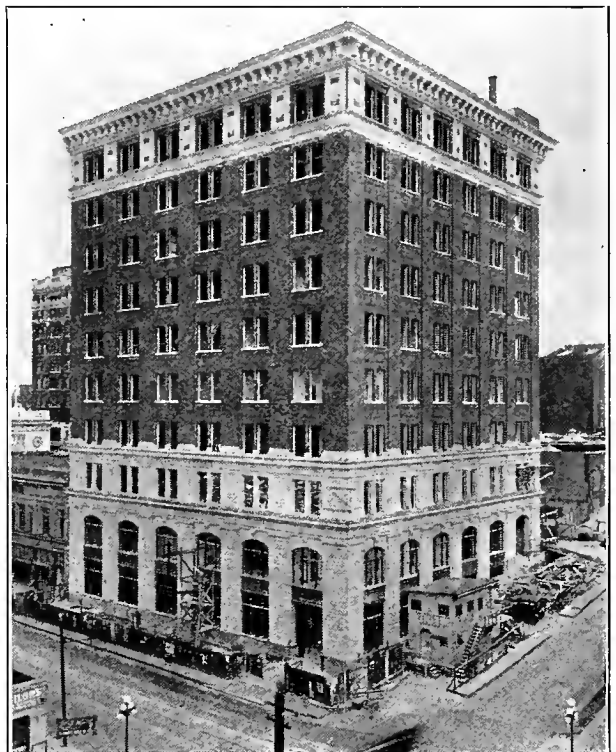
SAN DIEGO

With a 979.5 per cent increase in building permits in April this year over the same month last year it is clear that San Diego is not going to remain stationary. Electricity has figured prominently in the building operations which so far this year have exceeded five million dollars in permits. The picture is of the recently completed Holtzwasser Building.



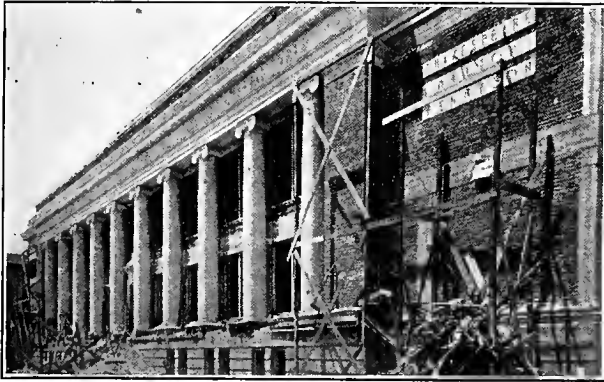
SAN FRANCISCO

A good example of the commercial buildings which are being erected in San Francisco is the new Standard Oil building, part of the program which has averaged over two million dollars a month for the past five months of this year. Electric power is largely used in the building operations in San Francisco as well as in the finished buildings.

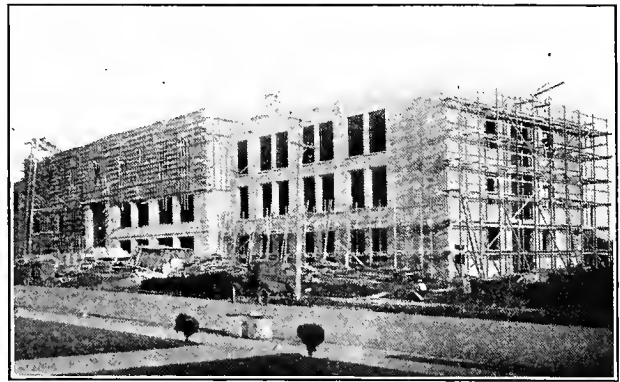


SEATTLE

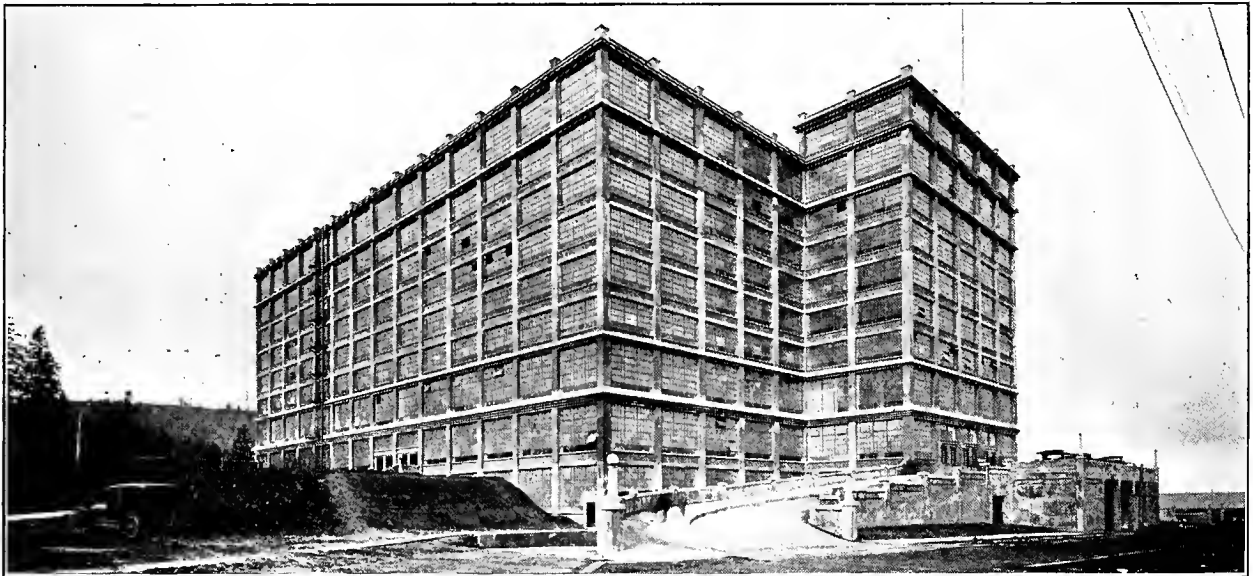
A special feature of the new building of the Pacific Telephone and Telegraph Company in Seattle is the 30-kw. generator in the building which uses illuminating gas as a fuel. The building permits in Seattle so far this year total \$5,191,805 with the prospect of continued activity in building lines to meet the demand for more homes and office buildings.

**PHOENIX**

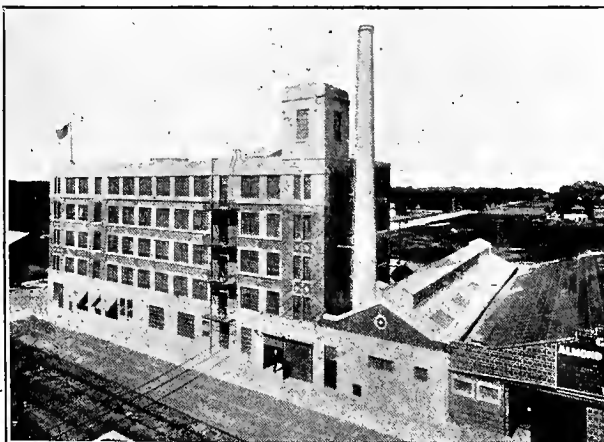
Over one million dollars have been granted in building permits to Phoenix since the first of the year. The photograph shows one of the new buildings being erected at the high school. The necessity for increased space for schools reflects a healthy growth in any community.

**BERKELEY**

Practically all of the \$1,256,570 in building permits granted in the first five months of 1921 in Berkeley were for homes. The electrical home idea is being taken up in this city and most of the homes are being equipped with convenience outlets. The building shown is the new high school under construction.

**PORTLAND**

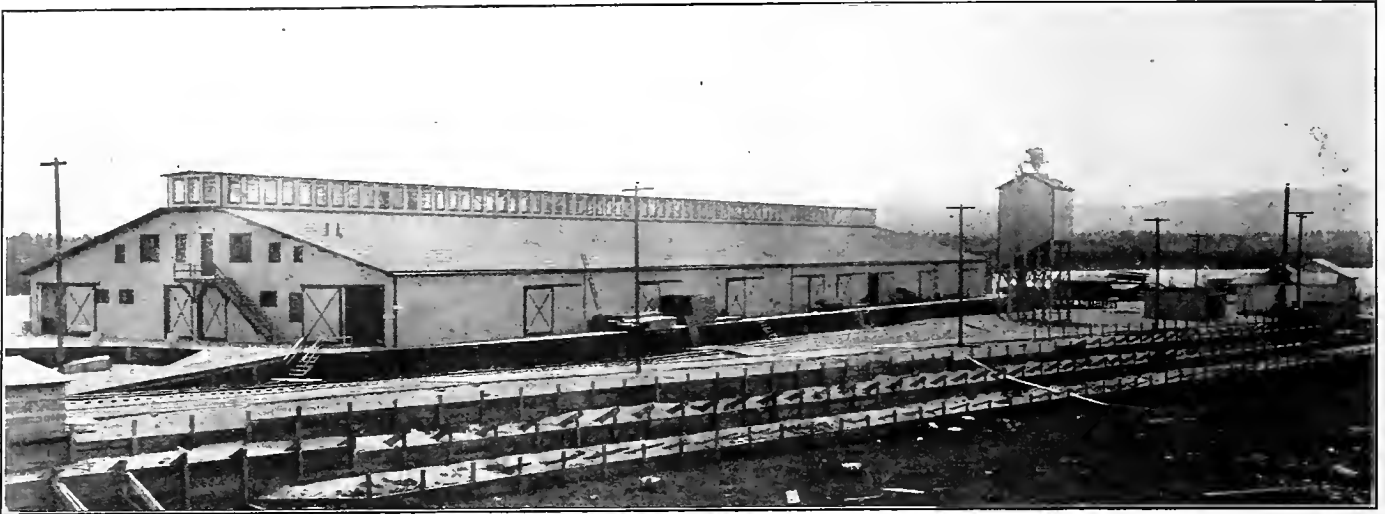
The plant of the Montgomery Ward company, which is a large industrial user of electricity, was recently completed in Portland and is said to be one of the largest buildings on the Pacific Coast. The million dollar plant of the American Can Company adjoins this plant. Portland has made rapid strides in commercial and industrial building this year with \$6,903,210 in building permits.

**SACRAMENTO**

The new plant of the California Almond Growers Exchange is but one of the new industries which are almost completely electrically equipped being built up around Sacramento. With permits so far totalling \$1,653,697 this city is breaking all previous records and is looking forward to continued activity.

**LONG BEACH**

More than \$5,000,000 in permits have been granted in Long Beach or an average of a million dollars a month. The new Markwell building which has been recently completed shows the trend toward commercial building which is taking place in this city, which is also building up its home district.



The first unit of the Aladdin Company's new Read-cut house factory at North Portland, Oregon. The construction of this plant was necessary to meet the demands for the Company's readi-cut house in the West and the countries bordering on the Pacific Ocean. Portland, the center of the lumber industry of the Pacific Coast, was chosen as the site for this plant because of market conditions, transportation facilities, and the ready supply of electrical power.

The Construction of the Readi-Cut House in the West

BY A. A. PATTERSON

(Conservation and the house shortage are two absorbing topics of the day, and the Aladdin Company at its factory in Portland seems to be doing its best to settle both these problems by turning out ready-made houses built with standardized material, effecting a great saving of material. One of the features of the Portland factory is the individual drive on the machines, in which electricity once more has proven itself the basic industry of all industries. The author of this article is general manager of the Aladdin Company at Portland.—The Editor.)

If "Aladdin" could have rubbed the proverbial magic lamp and conceived the idea of the "Readi-cut" house, he would have advanced civilization many thousands of years and been thanked by posterity to this day, but it remained for W. J. Sovereign,

Ore., and demonstrated that a saving can be made. Consequently this system promises to assist the builder in improving the houses he builds and at the same time reducing the cost.

The readi-cut house system is strikingly similar to the method in which component parts of the steel frame of the modern sky-scrapers are cut and fitted in the shops, and delivered to the job in such shape that the only labor required there is in the erection. Admittedly a circular saw and a planer can reduce a tree to sized and surfaced planks in far less time than a number of men, skilled as they may be in woodcraft, working with hand tools. Likewise the other machinery used in a modern mill can plane, rabbet and join lumber more accurately, more neatly and in much less time than carpenters on the job. And so carpenters and builders have no hesitation in accepting the introduction of such machinery as the planing mill into the lumber industry as an aid to them, and not as a detriment or a competitor. The fullest use of modern wood working machinery, and the development of new machinery which can at one operation cut rafters to size, and notch them at both ends and at the point where they rest on the plate, and perform other similar time saving feats,—this is the labor-saving basis upon which readi-cut houses stand. One such machine, a pneumatic control gang trimmer, invented for this purpose, is capable of trimming a truck load of lumber in five minutes, whereas it would take a carpenter and his hand saw half a day to perform the same operation.



"Pasadena Bungalow," one of the many neat appearing types of house "readi-cut" by the Aladdin Company, Portland, Oregon. A man does not need to be skilled in the art of guessing and cutting to erect one of these houses; all he needs is a hammer and some nails.

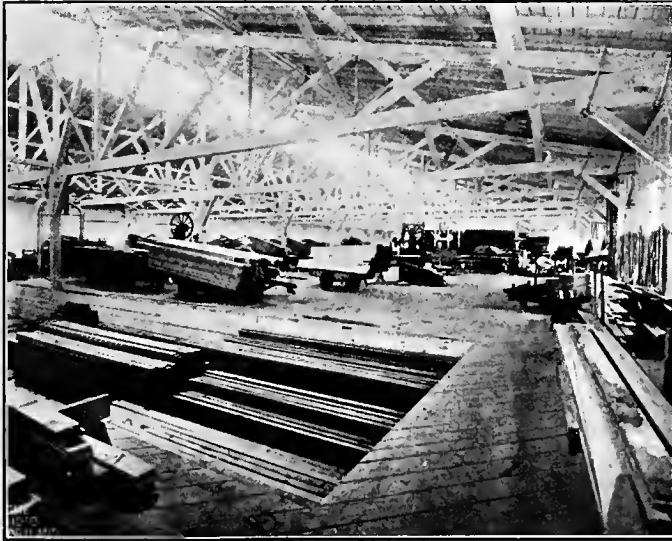
president of the Aladdin Company to originate the idea in 1905. Read-cut houses are built with the idea of economizing on labor and material, the two principal factors which enter into the construction of a house. It is obvious that if the amount of these principal factors is reduced, the cost of the completed house will necessarily be reduced. Working on this theory, the Aladdin Company, the largest manufacturer of readi-cut houses in the world, has built up extensive factories in half a dozen sections of the country, including the factory at Portland,

Standard Size Members

Standard items can be manufactured in large quantities at a low cost, while special sizes and

lengths require readjustments of machinery which add to the cost. By means of special machinery, timber is not simply felled and cut into lengths and planks, but the planks are planed, sized, notched, grooved, and surfaced for readi-cut houses so that no such work is left to be done in the field.

To make this cutting and fitting of the various members of a frame house by machinery profitable,



Interior of the Aladdin factory at Portland. Here all of the members entering into the construction of a house are cut to size and shape and made ready for assembling. Every machine is individually, electrically driven and helps to make possible the elimination of the carpenters' hand saw on the job.

it is essential that the machinery be utilized on long continuous runs without frequent changes of lengths, sizes, etc. To accomplish this the members of the house are standardized and made up in such quantities as to reduce the unit cost to a point very much below the cost of framing by hand. Standardizing the members of the frame does not necessarily mean that the plan and elevation must also be standardized. As a matter of fact the number of different plans and elevations which the manufacturer of readi-cut houses offers his customers, runs well up into the hundreds. It only means a careful study of the plan of the house so that when it is framed, the members can be made of standard sizes.

In order to make the many different styles of houses available at the receipt of order, the material must be cut and stored ready for shipment. To keep a complete stock of a hundred different houses would not be practical, and so the parts are standardized, being made of sizes and lengths that are interchangeable from one house to another. These parts are made up in advance and can be quickly assembled for an order for one or a hundred houses no matter what the style. This of course requires considerable study on the part of the architect.

Saving of Material

A most natural corollary to the study of a house in producing standard size members, is the study of the lengths of lumber to use in cutting these members with a minimum of waste. How often have we seen carpenters on a job take timbers and planks from the pile and cut off the piece they have use for, irrespective of the length of the board left over, and

without considering the fact that shorter pieces may have been figured for that purpose in the lumber bill of material.

When a member of a readi-cut house is designed, the lengths of material from which it can be cut in the most economical manner, are considered. Spacing of windows offers another important way to effect standardization. From an architectural standpoint it often matters little whether the windows are spaced six inches one way or another. But from the standpoint of economy it can readily be seen that it is decidedly better to space windows at such intervals as will permit of the use of standard lengths of lumber, rather than at uneven intervals which might cause the loss of six inches to two feet on each piece of lumber.

Shipment

The material cut for the many different houses is marked and stored in the warehouses. When an order is being prepared for shipment the various pieces for the house are gathered, numbered and loaded in the car. All parts and pieces are assembled logically, and loaded in the car in the order in which they are used later. The parts of the stairs are bundled together, and the windows, etc., are all numbered to coincide with the erection plan which accompanies the order.

Electricity an Important Factor

The economies incident to the use of electricity dove-tail in admirably with the readi-cut house system. The flexibility of electric drive, the ease of application to the problems encountered, the elimination of wasteful line-shafting and belting all make



A replica of the Pasadena Bungalow, which the Aladdin Company is featuring in the West, which appeared in the parade of a "Million Roses" during the recent Rose Festival at Portland. At the left of the house may be seen Aladdin with his "Magic Lamp."

for efficiency and increased production, and hence lower unit costs. The Aladdin Company's factory at Portland is electrically operated throughout, there being some 300 hp. of installed motor capacity. Individual motor drive is used exclusively.

The foundation plan showing how to excavate and what size foundation to build, is sent first. This work is often started before the materials for the

superstructure arrive. This plan also indicates where each kind of material should be piled to expedite building. With every member of the superstructure cut to fit, the carpenters spend their time nailing the pieces together. The parts are passed up to the carpenter by a laborer, thus eliminating the climbing up and down ladders by expensive carpenters.

The completed house becomes permanent, not as some people think, a flimsy, make-shift sort, which is designed for emergencies only.

A Large Field

Predicated upon economy, not only in labor and material but in shipping, only the net amount of material entering into the construction of a house, the readi-cut system has for its field the entire world. The Aladdin Company not only supplies a large domestic market, but ships its product to the antipodes, the South Sea Islands and in fact to every corner of the globe.

AN EARLY ELECTRICAL HOME

(While it is only in the past year that the electrical industry has begun to advocate and advertise the "home electrical," seven years ago the wide-awake and enterprising editor of the Byron Times, one of the cleanest newspapers published in California, and one which has done good work in helping carry the electrical story to the public, built an electrical home that was complete in every detail. He was asked to write a letter regarding this home, and the following article was taken from the contents of that letter. —The Editor.)

"We studied the electrical problem for some time before building," . . . thus writes Harry Hammond, editor of the Byron Times, Byron, California, and owner of a home which was completely equipped for the use of electrical appliances when it was built seven years ago—in November, 1914.

The Hammond home is rural only insofar as its location on the outskirts of a small town justifies the term "rural"; in every other respect it is several years ahead of many of our so-called modern homes of the larger cities.

Friends tried to dissuade them from the idea of electrifying their proposed home, when they first planned building. They said that the power bills alone would amount to from \$50 to \$75 per month. Now, after a period of seven years, Mr. Hammond proudly states that at no time has his power bill ever exceeded \$20 per month for everything—cooking, dishwashing and laundering for a family of four, water heating, air heating, vacuum cleaner, lights, and pumping water for irrigating the two-acre tract; for although they have a windmill, the water which it stores in the 700-gallon tank is pumped by electricity from there into a big 4,000-gallon tank. And sometimes, when there is no wind, electricity has to do the whole job.

Electricity holds full sway in the home, even to the operation of the piano and the sewing machine, and too much cannot be said by the owners in praise of their "silent servant." "The electric dishwasher is a perfect success; and the electric clothes washing machine does remarkably fine work, never gets out

of order and hasn't cost one dollar upkeep in the past five years. And as for heating—we are still using in every room the electric heaters which we purchased for \$15 each in 1914."

The range now in use was also installed in 1914, and with the cooking for a family of four consumes from \$4.50 to \$5.00 electricity per month. In fact, Mrs. Hammond declares that, much as she enjoys and appreciates the comforts which her many appliances afford, with the single exception of her electric



The first electrical home in California, built seven years ago by Harry Hammond, editor of the Byron Times. The house is completely equipped electrically and the owner is completely sold on the electrical idea and is a staunch supporter of the industry in his enterprising newspaper.

lights she would part with them all before she would give up her electric range.

Then, too, there is the safety which electricity gives the rural home not having the safeguard of an efficient fire department. Not long ago, on a still day when none of the windmills were working, a neighbor's tank-house caught on fire and gravely endangered the residence. However, hoses were coupled together, connected to the Hammonds' electric pump and a pressure of 40 pounds was maintained continuously for one hour and the home was saved.

On the hot summer nights, when it is so inviting outside under the trees of the garden, a row of electric lights arranged over a shuffle board are lighted and the evening's entertainment is provided for.

It was a case of "a job well done" when the Hammonds had their home wired, and every foot of wire is carried in conduit. This, of course, added considerably to the original installation cost, but it adds so materially to the assurance of safety and protection that the extra expense is fully justified.

The reader may assume that Harry Hammond is just an "electrical bug," but such is not the case—the entire home is as completely modern in every other way as it is electrically; for instance: the kitchen has white enameled walls and ceiling, an interlocked tile floor and double-end porcelain sink. The electric dishwasher adjoins the dish closet so that it is but a second's work to take them, washed and dried, from the machine and place them on the shelves.

After seven years of experience living in an electrical home, Mr. Hammond says: "Just a tip—electricity makes for contentment in the home."

Annual Convention of the Pacific Coast Division, N. E. L. A.

("If our guests will go back to their people and carry the message of what the electrical industry means to the West, this convention will have done more for the West than any convention ever held within its borders." With these words the Dean of the electrical industry struck the keynote of the 1921 convention of the Pacific Coast Division of the National Electric Light Association. The message given to the West at the industrial conference will be taken up by the industrial, financial and commercial men asked to be present, and the electrical industry itself must continue to carry direct to the people the facts brought out at this convention. —The Editor.)

With an attendance well over three hundred, and some of the most influential men in the industrial, commercial and financial life of the West present as guests, the fifth annual convention of the Pacific Coast Division of the National Electric Light Association brought out the fact that of the problems facing the industry today one of the most important was better relations with the public. All branches



Some of the pioneers of electrical development in California. Reading from left to right: A. G. Wishon, vice-president and managing director, San Joaquin Light & Power Corporation; John A. Britton, vice-president and general manager, Pacific Gas & Electric Company; R. H. Ballard, vice-president and general manager, Southern California Edison Company; John B. Miller, president, Southern California Edison Company; E. B. Criddle, general agent, Southern Sierras Power Company.

of the industry were represented at all of the sessions, and in spite of the perfect golfing weather, the discussions carried on by the faithful few were not only interesting, but offered valuable side-lights on the problems under consideration. At the general sessions there seemed to be a lack of discussion on the problems and policies of the association, probably due to the fact that the majority of the members were not fully posted.

President's Report

"The Pacific Coast Division is today without a proper constitution—a situation which must receive your attention at this convention. The National Association has not seen fit to ratify the constitution offered by this division, and the executive committee of this division did not concur in the recommendation of the national body that the 'typical constitution' which it suggested be adopted. * * *

"There is no doubt that something must be done to develop a greater interest in the Pacific Coast Division, National Electric Light Association, if it is to justify its existence. The first step in this direction might be made by merging the activities of the California Electrical Cooperative Campaign and those of this division. Federation with the several electric clubs in existence in California might also be brought about. If this could be done to the satisfaction of all concerned, a powerful organization for the development of

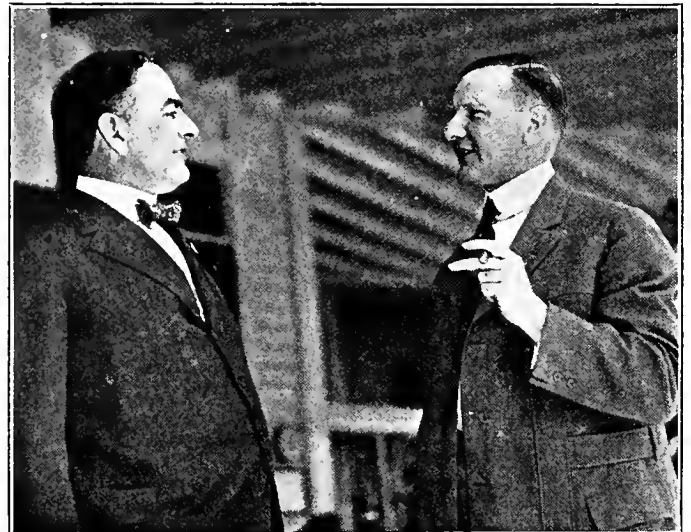
the electrical business within the territory embraced in this division would be brought into being. * * * It is not necessary or advisable for me to outline in detail here the complete plan of organization along the lines suggested, but I shall venture to sketch in a very general way what I have in mind.

"The constitution should provide for equal representation on the executive committee of all branches of the industry. * * * There should be the usual administrative officers; there should be a capable executive manager; there should be a publicity bureau composed of advertising men in the industry with a paid publicity man of real ability at the head of it. A speakers' bureau might be made up of men in the industry with a paid speaker of effectiveness at its head. There should be a bureau of engineering with a chairman to preside over its work. Finally, the plan would include a bureau of commercial activities, made up from men in the industry, this bureau also being under the supervision of a chairman, all reporting to the manager, who would be responsible to the president and executive committee.

"I do not recommend a divorce from the National Electric Light Association, but I do favor 'home rule,' and I am confident that if a determined stand is taken before the National Association, a satisfactory plan for 'home rule' could be formulated and affiliation continued.

"The foundation of the work of the association or league which I have suggested would be the thorough education of the 'man in the street' in things electrical. The main objective would be to secure for the power companies the support of the public; for it must be granted that upon the success of the power companies depends the success of the manufacturers, jobbers, contractor-dealers and engineers.

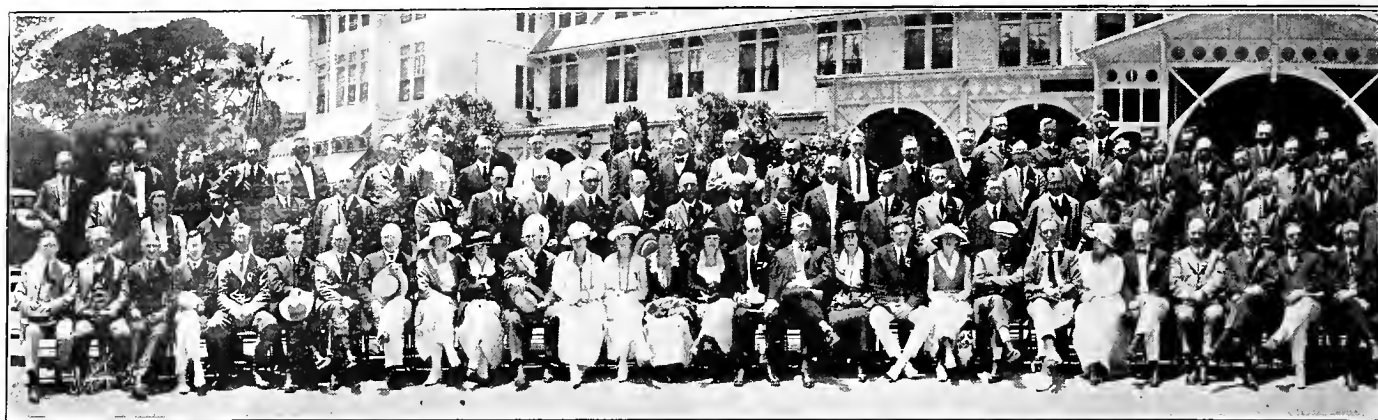
"Above all, such an organization would emphasize the splendid part the public service industry is playing in the



Lee H. Newbert, division manager of the Pacific Gas & Electric Company retiring president of the Pacific Coast division, had occasion to talk things over with "Bob" Eltringham, who, when he is not holding the job of general chairman of a convention, is executive manager of the California Electrical Cooperative Campaign.

development of California. There is a positive need for the public to possess a thorough understanding of what electrical enterprise is accomplishing for the enrichment of our vast domain. Why not, then, create a strong organization here on the Coast, truly embracing all branches of the industry to meet this pressing need?"

President Newbert's report was received with great enthusiasm by the members of the association,



Group of delegates and guests who attended the fifth annual convention of the Pacific Coast Division

and the following committee was appointed to report upon the address: A. E. Wishon, general manager, San Joaquin Light & Power Corporation; S. A. Kahn, manager, Western States Gas & Electric Company; R. H. Ballard, vice-president and general manager, Southern California Edison Company, and H. F. Jackson, general manager, Great Western Power Company.

Reports of the Secretary and Membership Committee

In making his report Samuel H. Taylor, secretary of the Pacific Coast Division, N. E. L. A., spoke of the establishment of the offices of the division in San Francisco, and the bulk of work that evolved due to the fact that such an office had never been established before, and stated that besides the office routine there had been considerable work in filing the mass of material accumulated in the past five years.

The report of the membership committee showed a gain in members of all classes of 883, an increase of approximately 42 per cent, making a total membership of 2,532. The recommendations made by this committee dealt with suggestions for more efficient methods for securing members from each of the classes in the association. It was also recommended that a folder be prepared giving complete data on the National Electric Light Association.

The following committees were appointed:

Committee on Resolutions: F. M. Myrtle, publicity manager, Pacific Gas & Electric Company; C. H. Pierson, publicity manager, Southern California Edison Company; T. E. Bibbins, president, Pacific States Electric Company.

Nominating Committee: S. M. Kennedy, vice-president, Southern California Edison Company; P. H. Booth, manager, Ontario Works, Edison Electric Appliance Company; W. S. Berry, manager, Western Electric Company, San Francisco; F. A. Leach, Jr., vice-president, Pacific Gas & Electric Company.

Following the business meeting, moving pictures were shown of the construction work of the Great Western Power Company on their Caribou development on Feather River, and of the work of the Pacific Gas & Electric Company on their Pit River project. These two developments are typical of the many large developments being carried on in California today where the natural resources of the state are being utilized.

General Meeting

At the general meeting held Friday the reports of outstanding committees were heard. The report of the committee on nominations was as follows:

President, A. B. West.
First Vice-President, J. B. Black.
Junior Vice-President, L. M. Klauber.
Treasurer, Henry Bostwick.

Executive Committee, A. E. Wishon, Geo. Campbell, William Baurhyte, S. M. Kennedy, William Shepard, G. E. Arbogast, Robert Sibley, R. M. Holtermann, P. H. Booth, and R. S. Masson.

Report of Committee on Resolutions

The report of the committee on resolutions was then read by F. M. Myrtle, manager of the publicity department of the Pacific Gas & Electric Company. Gentlemen of the Convention:

Your Committee on Resolutions respectfully submits the following for adoption:

Whereas, This, the fifth annual convention of Pacific Coast Geographic Division of the National Electric Light Association, has been particularly distinguished for features of an unusually constructive as well as progressive character, and

Whereas, Prominent among these constructive and progressive features have been the papers presented and discussions resulting thereupon at each session of the engineering, commercial and accounting sections, respectively, therefore be it

Resolved, That we, as members of the convention, heartily congratulate the officers and standing committees of Pacific Coast Geographic Division of the N. E. L. A. upon the success which has crowned their efforts in making this convention one of unusual value to the electrical industry, as a whole, and in every branch of its activities, and be it further

Resolved, That we highly commend the work of the engineering, commercial and accounting sections, respectively, for the contributions they have made toward the progress of the electrical industry, and that, particularly, that in view of the vital importance of the accounting section in relation to financing and matters of public regulation, as well as its value in reflecting to executives and officials of the various public service corporations the trend of company affairs, this branch of the industry receive such encouragement as will make it of still greater value to the industry as a whole. And be it further

Resolved, That we take special notice of the Pacific Coast Industrial Conference called for the closing day of this convention for the purpose of presenting to the people of California in clearest terms the great industrial future that lies before their state and, also, of putting forth the immense program of hydroelectric development that will enable its realization, and be it further

Resolved, That we, representing every branch of the electrical industry in California, pledge our earnest and undivided support to the program of hydroelectric development, and that we urge not only upon those in authority but upon all good citizens of our beloved state the necessity for this development unhampered by restrictive legislation but under wise and proper state regulation.

Resolved, That we commend most highly the work of the California Electrical Cooperative Campaign, which during the past twelvemonth has gone far toward binding together in cooperative activity the various branches of the electrical industry, and that, realizing as we do that in cooperation lies the realization of the great future to which we have referred, we urge that the work of the California Cooperative Campaign be carried on to yet more praiseworthy results.

Resolved, That we give words of praise and encouragement to the Journal of Electricity and Western Industry for the valuable assistance it has rendered and is rendering in giving due publicity to the progress of every branch of the electrical industry in California, and we extend our hearty thanks to that Journal for its assistance rendered to this conven-



of the National Electric Light Association at Del Monte, June 7-10, 1921

tion in publishing in advance the papers presented thereat, and in other ways lightening the labors of its officers and committees.

Resolved, That we voice our appreciation of the many courtesies extended to us by the management of the Hotel Del Monte, through which our stay here has been made most comfortable and pleasant.

Respectfully submitted,

FREDERICK S. MYRTLE, Chairman,
TRACY E. BIBBINS,
CHAS. H. PIERSON.

Report of Committee on President's Address

The report of the committee on the president's address presented by Chairman A. E. Wishon took up the following recommendations:

To the members of the Pacific Coast Division, National Electric Light Association:

1. We first wish emphatically to endorse the work of the N. E. L. A., particularly during the past two years, and to express our belief in the necessity of maintaining a national body.

2. We feel, however, that if such an association is to function so as to represent the electrical industry nationally, that its membership should include the different branches of the industry, and that all members should have the full privileges of membership. The Pacific Coast section has recommended in the past a delegate form of national convention, to be composed of delegates representing the different geographic divisions. While we understand that it is first necessary to form the United States into different geographic sections, and that much has been accomplished in the past year in this work, and further that this work must be completed before such delegate form of convention can be established, we suggest that the Pacific Coast section again go on record as recommending such form of organization, and of encouraging in every way possible the bringing into effect of this new form of organization.

3. With regard to the condition that occurred early this Association year, when our budget was reduced by the national body and payment delayed, resulting in a policy of retrenchment being forced upon this section, we feel that steps should be taken to prevent a recurrence of this condition. We feel that it is essential in the operation and conduct of any well-regulated business to lay out a program based upon the moneys that are available, for the carrying out of such a program. The by-laws of the National Electric Light Association allow a maximum rebate of 50 per cent of the dues paid in by the geographic sections, the actual allowance being based upon the activity of the section. Inasmuch as this is one of the largest and most active sections in the association, and inasmuch as our local activities are as important as our national activities, and as it is as easy for the national activities to be held within the budget as it is for the local, we recommend that the incoming executive committee immediately discuss this subject fully and thoroughly with the national body.

4. During the year the Pacific Coast executive committee recommended to the national association that the budget include railway fare to all national section delegates, so that western representatives would be present at all important meetings. Unless this is done the burden falls much more heavily upon the Western sections, as most of the meetings are held in the East. Therefore we suggest that this recommendation again be made to the national body and be followed up.

5. We heartily endorse the president's recommendation regarding public relations and educational publicity, and believe that this is the most important subject before the electrical industry today.

6. Referring to the action of the National Electric Light Association in not approving the by-laws of the Pacific Coast section, we suggest that the Pacific Coast section by-laws as adopted at the Pasadena convention last year, be considered in effect as far as the Pacific Coast activities are concerned. We further suggest that these by-laws be returned to the national body with arguments supporting the same, and requesting that the national body approve them as by-laws for the Pacific Coast section of the National Electric Light Association.

7. We approve the suggestion that the national association can best transact business with local members through their local section and through committee chairmen. In the past where the business has been transacted directly, it has not been satisfactory and has caused endless duplication of effort.

8. We approve the suggestion that electrical terms be simplified so that the layman may better understand our language and our industry.

Respectfully submitted,

A. EMORY WISHON, Chairman,
R. H. BALLARD,
SAMUEL A. KAHN,
H. F. JACKSON.

M. H. Aylesworth, executive manager of the National Electric Light Association, then spoke as follows:

"In behalf of the National Association I wish to state that we are dreadfully sorry that the budget for the Pacific Coast division was delayed this year, but it was unavoidable due to the change in the system of handling the dues. However, if the Pacific Coast division will get its budget made up and sent back in time for the early August meeting, I promise that the first check mailed from the headquarters will be sent to the Pacific Coast division.

We in the East are looking to the Pacific Coast division to lead us in the various schemes for getting cooperation within the industry. As fast as we can make amendments to the national constitution, we will bring about the cooperation and representation between and for the various branches of the industry within the association. During the past year ten geographic divisions have been added to the national association, and we are working hard in the East and Middle West to bring the local sections into the national association as geographic divisions. We look to the Pacific Coast division for new thoughts, and we are working in the East to carry out the ideas expressed by your Pacific Coast section.

I would now like to review the more important activities of the national association during the past year:

First, the joint committee appointed by the American Telephone and Telegraph Company and the National Electric Light Association on inductive interference. This committee composed of high officials in the A. T. and T. and power company officials of the association, has done good work toward the solution of this important problem.

Second, the accounting section in conjunction with the executive committee have prepared a uniform system of accounts for public utilities, and it is extremely interesting to note that at the recent meeting of the Association of Public Utility Commissioners, a classification of accounts was adopted by them unanimously which exactly agreed with the N. E. L. A. classification except in one or two minor details. During the next year I look to see this uniform classification of accounts adopted by the majority of the states in the Union.

Third, the water power committee, composed principally of western public utility executives who understand the water problems so well, has done excellent work in Washington, D. C. In working with the Water Power Commission, it has brought about a new set of rules and regulations which comply in every detail with the suggestions made by our water power committee.

Fourth, in taking up the work of the public relations committee, I feel that it is impossible for us in the East to teach you anything on this subject, for the West has strongly developed a laudable system of public relations, and is doing excellent work in disseminating public information. The trouble with the electrical industry is that we have sat mute for many years, and having suddenly started on a course of public information by an extensive advertising and publicity campaign, we are disappointed when we wake up the next morning and find that our message of good will has not been received over night. We must keep on telling the story, and maybe after many years we will get the continuous response on the part of the public that we are now seeking.

This past year may be termed as having been an investigatory year, for we have seen the investigation of the regulatory commissions in many states of the Union. The people have sought home rule. The reason for this is not difficult to find. With increasing costs in all commodities, the people have turned to regulate the cost of the only commodities which they could regulate—the public utilities.

Just at the close of the National Convention came the word of the flood in Pueblo which rendered the city without heat, light, or power. The power company's switchboard standing six feet above the level was covered seven feet deep with mud. The power company officials were on their way back, and a group of us on the train decided that as members of the National Electric Light Association we should form a relief committee to go to the help of Pueblo. Consequently we wired ahead for engineers from the manufacturers and power companies in the nearby states to meet us at Cheyenne. When the details of the relief committee were about worked out we reached Cheyenne and found that our member company in Pueblo had literally lifted herself by her boot straps, that a power line had been run twelve miles through the muck and slush, that already electricity was being used in the town to assist in the cleaning up of the debris, and that active construction work was under way with the aid of electric light and power so furnished. With such a spirit in our industry as is shown by Pueblo, we can if necessary lift ourselves by our boot straps and overcome any problems that come to us. Gentlemen, any industry that can pick itself up in such a manner is an industry which will live under regulation and go ahead.

DISCUSSIONS IN THE COMMERCIAL SESSIONS

Following the reading of the papers on commercial and industrial lighting, the discussion centered upon the extent to which the central stations should do the necessary ground-work.

Industrial Lighting

The discussion was started by Clark Baker of the National Lamp Works, who gave the results of a survey made of the industrial plants in California to determine whether it would be feasible to start in a big way to sell industrial lighting. This survey showed that there are 15,000 manufacturing plants in California; 2700 in Los Angeles, 2300 in San Francisco, and 1800 in the East Bay territory. If 50 per cent of these plants are adequately lighted it still means that there is a big field for the selling of scientific illumination. Mr. Baker showed charts made up from the results of an intensive survey in the East showing the extent to which proper industrial lighting has been adopted in that territory. By these charts it was shown that 25 per cent of the work done was under artificial light, and that conditions were far from satisfactory.

L. E. Voyer, Edison Lamp Works, then took up the discussion and stated that there were great possibilities for good and evil in illumination, and that the good accomplished by proper lighting was shown by increased production, lower labor turnover and fewer accidents in the industrial plants. He then went on to tell of some of the cases where the industrial lighting exhibit in San Francisco had made converts of men to whom it had been impossible to sell lighting before.

Tracy Simpson, Federal Electric Sign Company, then brought out the fact that in the East where good results had been obtained, the power companies had done the development selling, which can be done most effectively by the power companies. W. S. Berry, Western Electric Company, stated that with the figures presented by Mr. Baker there was not enough incentive to go very vigorously after the lighting business in the industrial plants. With only 7500 plants, figuring at \$200 per plant, it made only a total of \$1,500,000, and when that was divided up between 200 jobber salesmen and 1,000 contractor-dealers, it did not make a very big prize to go after. "Is this not the reason," he said, "why the various branches of the industry have not made a bigger effort in behalf of industrial lighting?"

In rebuttal, Clark Baker stated that the industrial lighting was merely a step to educate the public, and that other

commercial and semi-industrial lighting installations would naturally follow. That the cause for the prevalence of poor lighting was due to the fact that at first there were no reflectors, and that since that time there has been no determined effort to sell the idea of reflectors to the public, was the statement made by D. E. Harris, of the Pacific States Electric Company. H. L. Harper made the suggestion that, since we sold our climate to the Easterners to get them to come West and establish their industrial plants, and as one of our talking points was the natural number of days of sunlight, and that since these points were made on account of the fact that better illumination meant more output, the electrical industry should prepare a pamphlet telling the effect of light upon production, and give it to the Chambers of Commerce for distribution. The relationship established in the public mind between light and factory output, it would be easy to sell the person on better artificial lighting, which could be easily done in the same booklet. These would be readily distributed by the Chambers of Commerce, and it would put the message of the electrical industry before a large number of industrial prospects. Several other points were brought out, but most speakers were of the opinion that the central stations should show more interest in the campaign for better illumination, as they are the ones that profit most. In closing the discussion Chairman Fisher stated that he believed that there should be a permanent lighting committee to carry on the work of the committee, which had already accomplished so much.

Retail Sales People

Glenn E. Arbogast, F. E. Newbery Company, then read the paper prepared by the sub-committee of which he was chairman, on "Meeting the Demand for Retail Sales People." In commenting upon this paper Mr. Arbogast said: "While this paper was written primarily for the contractor-dealer, there are certain points that could well be taken by the jobbers, and for those central stations that are still merchandising. The electrical contractor-dealer has failed to realize the future of his business, especially the sales side. In a city where there are a million dollars of building permits for small cottages given out each month, the contractor-dealer will do his best to secure a \$100 wiring job and overlook the possibilities of selling the owner of that cottage a washing machine which will net him more than did the wiring." Mr. Arbogast suggested regular sales meetings as one method of training the sales people, and stated that the jobbers should get in on these at least once a month and demonstrate the selling points of the new appliances, so that the salesmen and saleswomen would have better selling arguments. Another point brought out by Mr. Arbogast was the fact that the salesman will not read the trade publications unless he is checked up by having a marked copy sent him in which he initials the article in question after it has been read.

In the discussion that followed, several good points and suggestions were brought out. D. E. Harris, Pacific States Electric Company, suggested that the solicitors be trained before being sent out to learn from the public and from experience. This one fact has done more harm than good to the industry. In order to make a commission for the sales people fair to them and to the customer, he suggested that they be paid not the amount of the sales that they made during the day, but rather with reference to the number of sales. This would make it just as much of an incentive for a clerk to wait upon a small customer as upon a large one, and all customers would receive equal attention.

Public Relations

J. D. Barnhill, of Evans and Barnhill, stated that while he had only been on the Pacific Coast since the first of the year, the fact that the need of the electrical industry was a better relation between the industry as a whole and the public

was quite apparent. He brought out the fact that the electrical industry was developing the natural resources which belonged to the people; that these public utilities were answerable to the people through the public service commissions, and that the people still had to be educated to that fact. The truth remains, he said, that in the past the public utilities kicked the public's dog around, and while the corporations might be having a change of heart, it would be hard to convince the man on the street. If the industry is to go ahead as fast as possible it must have the confidence of the public, and the only way to get that is for the industry as a whole to pull together and win the confidence of the public.

SECOND COMMERCIAL SESSION

At the opening of the second session W. L. Frost, Southern California Edison Company, who had attended the National Convention as a delegate from the Pacific Coast Geographic Division, N. E. L. A., outlined the work that had been accomplished in Chicago.

Electrical Homes

Garnett Young, Garnett Young & Company, then read his paper on "The Convenience Outlet—Its Progress and Future." In the discussion following his paper several extremely interesting points were brought out. A. L. Spring, California Electrical Cooperative Campaign, spoke on the work that was being done in the high schools and preparatory schools in the southern part of the state to train the housewives of tomorrow in the use of electric appliances and the proper method of attaching the appliances—namely, by using the convenience outlet. H. L. Harper, Western Electric Company, stated:

"We have got to get this message over to the public. The contractor-dealer who meets the public and has closer association with it than any other branch of the industry, is not selling the convenience outlet idea. The public is used to being sold more than it wants, but the contractor-dealer generally works in the opposite direction, and by destructive criticism insists on the householder taking fewer outlets. The big men in the electrical contractor game will not take house-wiring on account of the cutthroat method used by the 'ninety-day' contractor. I believe that the big contractor has a responsibility to the industry to put in a branch that will handle house-wiring and see that it is done right."

E. B. Criddle, Southern Sierras Power Company, told of the method used by his company which does not supply any large centers of population. This company makes it a practice to work through the contractor-dealer, and by keeping in close touch with him, is able to put over the story. G. E. Arbogast, F. E. Newbery Company, then told of the results accruing in Los Angeles from the adobe electrical home campaign. This electrical home was built in a restricted residential tract and the tract managers were sold on the convenience outlet idea. Recently a survey was made of the homes that had been built in this tract since the electrical home closed. Even though this home had over a hundred outlets and was inspected by fifteen thousand people, the homes that had been built since, numbering some fifty or sixty, only contained an average of one convenience outlet. Mr. Arbogast recommended that an assistant be appointed to help out Mr. W. F. Price of the Electrical Cooperative Campaign in the excellent work that he is doing. In answer to Mr. Harper, he stated that since the larger contractor-dealers only employed the most experienced and skilful workmen, they were unable to compete in the wiring of houses with the thumb-nail contractor who does most of the work himself. W. F. Price, California Electrical Cooperative Campaign, then said that he had found that the home builders do not give any thought to the wiring until the frame-work is up. Most of this work is done with a standard set of plans, and no architect is consulted. The greatest success with builders, he found, was to approach them when the frame-work is up and they are ready to talk wiring. At that time they will take suggestions and can usually be convinced of the advisability of adding convenience outlets. Mr. Price also stated that the self-interest story regarding convenience outlets when told

to the wire men got a ready response and resulted in their selling the story to the builder or the owner. Emmet N. Britton, managing editor, Journal of Electricity and Western Industry, suggested that the placards which have been placed on the homes containing at least one outlet in each room, would sell the idea to the house hunter a whole lot more readily if a picture of the outlet were placed on one side of the placard with a cord leading across the bottom to an appliance on the other side. He also emphasized the necessity of using the same idea in all advertising of the convenience outlet so that the phrase when used would call up a mental picture of the outlet in the mind of the housewife or the man on the street.

Industrial Electrical Heating

After the reading of the paper on "Industrial Electrical Heating" by A. E. Holloway, San Diego Consolidated Gas & Electric Company, the discussion was opened by B. Y. Gibson, Edison Electric Appliance Company, who stated that a B.t.u. comparison between gas and electricity was not entirely fair, since the added convenience, cleanliness, and decrease in labor turnover, plus the increased efficiency of the electric heater more than made up for the cost per B.t.u. He also stated that the load was desirable from a central station standpoint because it came in the downtown sections which meant no extra services or transformers, and that the load usually came on off-peak hours. The rest of the discussion was taken up with suggestions for other forms of industrial heating which had not been worked out, and the manufacturers' representatives stated that they would be glad at any time to take up the discussion of problems involved in any particular use.

Commercial Electric Heating

The final paper presented before the Commercial Section was "Commercial Electrical Heating," which was presented by Mr. Fred C. Piatt, Pacific Gas & Electric Company. P. E. Booth, Edison Electric Appliance Company, opened the discussion by stating that in his opinion the paper had not laid



John A. Britton, vice-president and general manager of the Pacific Gas & Electric Company, was chairman of the public policy committee and also toastmaster at the annual banquet. They call him "the youngest old man in the industry."

sufficient stress upon the value of the electric range to the central station. As the range load is approximately only one per cent of the total load, it was hard to determine which type of current was the most profitable for the central station. The compensating advantage of the electric range and the range load consists primarily of the diversity factor, and he stated that the Utah Power & Light Company figures each range at only 800 watts due to this diversity. K. E. Van Kuran, Westinghouse Electric & Manufacturing Company, stated that very naturally the manufacturers do not like to see anything given out that will harm the use of the range. It was his belief that the range has to go through what the motors went through. At the present time the range price is too high and is liable to remain so until quantity production is reached. Mr. Booth stated that the rate of increase in the use of the range should properly be considered in comparison with the total number of connections made. If the use of the range is advocated only in connection with an irrigating load or some other load, the idea is given that the range is not economical for universal service. This has been proven untrue, as the range is past the experimental stage. Garnett Young, Garnett Young & Company, stated that he believed the central stations could afford to forget the comparative cost between the range and motor load, on account of the service to the public and the winning of many more friends for the electrical industry. He also stated that a low rate for electrical cooking would make a good selling point in a stock selling campaign. J. B. Black, Great Western Power Company, brought out the point that the central stations were able to make a profit on the range load and that electricity was able to compete with any fuel. The question of distributing ranges, according to Mr. Black, was a sales problem. The first cost of the range must come down if it is to be sold in quantities, and the cost of installation must be brought lower or eliminated entirely by having all houses wired from the very beginning. This would solve the only objection that a great number of people who are renting houses have to the electric range. In summing up the discussion, Mr. Piatt stated that the range load cannot be considered as a basic load, and must remain an auxiliary load for many years and be treated, as far as rates are concerned, in connection with other loads.

DISCUSSIONS IN THE TECHNICAL SESSIONS

In the discussion of the paper on 220,000-volt transmission the general opinion was expressed that the problem of increasing voltages to that height was well understood, and that the application of such high voltages was now but a question of economics.

Insulation for 220,000-Volt Transmission

The point was brought out that as the use of more than eight units in a string will not reduce the voltage duty of the line end units, it will be necessary to use one of the several forms of shields that have been evolved to reduce the charging current now passing through the line end units of the forms of shields experimented with. Yet it now appears more desirable to use one with a porcelain insulator on it. J. A. Koontz, electrical engineer, Great Western Power Company, pointed out that the lines operating at normal voltages cannot possibly have generated in them voltages at normal frequencies sufficiently large to flash over strings of thirteen or fourteen units. Consequently it is apparent beyond question that the flashovers must be caused by high frequency transients, as only voltages of this character are able to flash-over gaps of the length of such insulator strings. He expressed the opinion that the most feasible method of suppressing such transients is to design the line for operation at very nearly corona voltage so that any increase in the voltage would be dissipated as corona. The determination of the

form of the electrostatic field surrounding these insulator strings requires extensive experiments to so relate the size, shape and location of the shields that the stress on the line end units will not be decreased, and at the same time the flashover distance to the tower and the cross-arm will not be decreased unreasonably. Experiments along this line were described by Professor Harris J. Ryan, Stanford University, who pointed out that the suppression of the flashover of long strings of insulators is primarily concerned with the control of the primary field. If the insulator is correctly designed, the secondary field found on the end of an incipient streamer will not take predominance—with the result that a flashover would be directed away from the string and injury to the porcelain thus prevented. He stated that over four hundred set-ups of insulators had been used to ascertain these points. The use of insulators, other than standard, in order to effect graded strings, has been thought undesirable by the Pacific Gas & Electric Company, and Joseph Mini of that company stated that the present installation of the company's 220,000-volt Pit River transmission line is to be made with the standard size insulators next to the conductor. It may be that experience will prove the reverse of this to be desirable.

Power Resources of California

On the discussion of the paper on the power resources of California the point was brought up that the totals of the amounts of hydroelectric power available in California, according to this report, did not check up with the totals given by some other authorities, and it was believed that the committee making this report should continue its work and determine, if possible, the methods used by the other authorities by which they arrived at their conclusions. In this manner a final result may be obtained which will be accurate.

There was practically no discussion on the relay paper, but the expression of opinion was that the committee had done excellent work in the researches it had made during the year.

Load Dispatching

The discussion of the paper on load dispatching brought out the fact that since load dispatchers are required to do their work through the medium of some form of communication, as their work is of such great importance to the companies, greater care should be given to the more reliable means of communication. For this reason great consideration should be given to the net results of placing telephone circuits on the same line with important transmission lines. The cost of the separate telephone line, the value of the greater service, and the inductive interference on such lines must be carefully weighed. It was urged that more extended experiments be made in the use of the wireless telephone and the wireless telegraph for the use of load dispatchers.

REPORT OF PUBLIC POLICY COMMITTEE

One of the clearest and most far-sighted reports of this nature was presented by the chairman of the Public Policy Committee, John A. Britton, vice-president and general manager of the Pacific Gas & Electric Company, who said in part:

With the close of the war confidence was established for the Pacific Coast states, and with a certainty of their future, capital has been readily obtainable for the development of the water powers of these states, and it is worthy of notice that during the past year a total of upwards of 100,000 horsepower has been added to the plants theretofore in existence; and with the program of development as announced by the several power companies it would appear as if in the next decade at least 100,000 hp. per annum, or a total of 1,000,000 hp., will be added to the hydroelectric power resources of this state and at a cost for generating plants and distribution



"Russ" Ballard, vice-president and general manager of the Southern California Edison Company, had a far-away look in his eye. He was probably thinking of the new Colorado River development.



Dave Harris, vice-president and sales manager of the Pacific States Electric Company, and Captain Jackson, general manager of the Great Western Power Company, were on the job lockin' 'em over.



Carl Heise, Westinghouse Electric & Manufacturing Company, and E. O. Edgerton, former president of the California Railroad Commission, were also among those present—most of the time.



L. M. Klaber, chief engineer, San Diego Consolidated Gas & Electric Company, handled the technical sessions in great style; also he was elected junior vice-president of the Pacific Coast division of the association.

systems in excess of \$500,000,000. That this amount of power will be readily absorbed in the increasing growth of the western empire of the United States is evidenced by its steady and continuous growth in the last decade. It must, too, be noticed that much of this growth and development has been due to the steady encouragement given to the power companies by the regulatory bodies and recognition of the necessity of earning a reasonable return upon the investment, and allowance for depreciation, has given encouragement to investors in the utility securities; little or no difficulty has been met with in the financing of past development, and it is confidently anticipated that the reputations established by the companies, through a proper encouragement of regulation, will provide the means for a continuation of the prosperity of these companies in the year to come.

Already the interconnected systems on this Pacific Coast permit of the transmission of energy from the Oregon line to the Imperial Valley, returning in a northerly direction from the Imperial Valley to the state of Nevada, and while not in a position to take care of or insure supply to meet conditions in all parts of the state, it is in fact a reality that paves the way for a more perfect interconnection that is certain to result in the future.

Public Relations

Perhaps the most important thing that has happened since the war period, has been the recognition by the public utilities of the necessity for better public relations. That note is sounded wherever men in public utility industry gather for conference; the necessity for it is urged by all regulatory bodies, it is now the slogan of the press, and the far-seeing and wise executive takes public relations as his text and preaches that gospel not only to his employees but to the public whenever opportunity affords. As a matter of fact, executives of all companies, leaders in public thought, and newspapers of reputation and prominence are speaking and writing daily public policy committee reports to the people of the whole United States; and the public policy committee report of this section could well be made up of excerpts from those who, having in mind the welfare of their companies and their consumers as well, have from time to time given utterances to their views on this subject; and as good words, like good deeds, increase in importance by repetition, I am going to quote from some of the leaders on the Pacific Coast the things that they have said during the past year.

Then came a series of statements made by the various power company executives on the Pacific Coast bringing out the necessity for better public relations:

It is too often the fault of large organizations that the man who, some distance from the head office, is compelled to come into contact with the people, and to represent by act and deed the corporation itself, is not educated in the policies of the company nor given sufficient authority to speak for and represent the corporation which it serves; thus his position is minimized, and of necessity the reputation of the company must suffer. It would seem as if in these days when an agitated public, having a rather left-handed view of public service corporations and what their activities mean in the development of the particular section which they serve, the companies should have as representatives in those sections men who for that section of the company should be able to speak authoritatively upon all questions. The one danger confronting large organizations is the fact that the personal touch of those who have authority to speak is lacking, and it would seem advisable in many cases to try the experiment of having each particular district appeal to the public served in that district as the home company, and by such actions much misapprehension of the activities of the head office would be cleared away.

Customer Ownership

The next subject taken up by the report was the advances that have been made in the consumers' ownership plan. In this regard, Mr. Britton said:

It has been estimated that there are somewhere in the neighborhood of \$5,500,000,000 now invested in the gas and electric utility companies now in the United States, and reading the future by the past it is estimated that the annual average growth will be about 8%. This will mean an annual requirement of nearly \$500,000,000 of new money in the United States in the immediate future, or considerably in excess of \$5,000,000,000 in the next ten years if the present rate of growth is maintained. And at least a goodly proportion of this great sum must come from the pocket book of the consumer through his ownership of the junior securities of the utilities which serve him.

There is probably no better way in which to arrest the unrest of the people and dissatisfaction, which in most cases is imaginary with public service bodies, than to have the consumers interested as stock holders and partners in the enterprise. The attitude of the public service corporation should be not only to enlist the investments of consumers but to make it their business to see that these investing consumers are given full facts in connection with the operations of the utility of which they are a part, so that they may be agencies in their communities to help in establishing a true relation as between the utility and the public. With that interest fully centered it is certain that much of the agitation for municipal ownership or state control would rapidly disappear.

The questions of the Federal Water Power Bill and regulation were then considered, the matter of inductive interference was touched upon, as was the activity of the Investment Bankers' Association which has taken an active part in the discussion of the affairs of public utilities and cooperated with representatives of the National Electric Light Association in the needs and requirements of all public utilities.

It would appear to your committee that member companies have a duty to perform which has been more or less neglected in the past, and which may be and possibly is responsible for some of the distrust still lingering in the minds of the people concerning the management and the operation and financing of public utilities, and that is the lack of proper information obtained by the young men and women attending public schools and universities.

Educational Possibilities

It would seem as if scholarships commonly used as a method of exploitation for certain subjects should be used by utilities in securing appearances of men trained in the affairs of public utilities before at least the high schools and universities of this country in proper explanation of the present status of public utilities and their aims and ambitions, to counteract mistaken ideas begotten of past errors and still existing in the minds of the teachers who cannot reasonably be expected, in the multitude of their duties, to be thoroughly informed on the subject of utility regulation and finance. The committee knows of no more fertile field for the dissemination of the true knowledge of the business of public utilities than the medium afforded by high schools and universities, for the plastic mind of the youth is ready to absorb information. But commonly the error exists in public utility affairs of telling the story to those cognizant of the facts and leaving the uninformed masses ignorant of the truths in connection with this great industry.

Technical journals devoted to the cause have unfortunately limited circulation and the great daily press only publishes that which is regarded as news. Fortunately there are some popular journals such as "Collier's Weekly" and the "Saturday Evening Post" which are now taking up the public utility side for the purpose of informing the public generally of the truth concerning the great service rendered humanity by the power companies, and on the Pacific Coast "Journal of Electricity and Western Industry" is doing heroic work without substantial reward.

It would seem wise to your committee to so extend the circulation among the masses of these papers that speak only the truth concerning the industry, that the great wall of ignorance that lies between the public served and the utility serving may be forever thrown down and the light of truth and frankness break through, so that in the days to come public utilities may not be beset with the dangers and difficulties which have menaced them in the past.

We believe it to be true that every man interested in the public utility industry of this country looks forward to the day when his motives will not be misunderstood and maligned, and when the great public will have the same confidence in its expression as it has in the expressions of any other merchant with whom it deals for the necessary commodities of life.

The Service of the Public Industry

We of the industry realize that the days of profiteering in public utilities has gone down into the dim and distant past and that of all the businesses of this great nation there is none in existence today that serves the public with less margin of profit than does the public utility. It is practically doing business on an economical cost basis, earning only sufficient to pay the interest on the money which it must borrow to develop and carry on its work of service and lay a sufficient margin aside to care for the depreciation on its property through the devotion to public use. With a confidence in the public served, your committee feels that this past year has been a year of understanding, and that the realization will come within a brief period to the masses of the people that the utility which serves it is as much an integral part of the state as is the most humble merchant or manufacturer, and that an industry which helps in the development of the industries of the state and without which the state could not prosper, is entitled to a fair hearing before the court of public opinion.

It has been estimated that one horsepower developed in the state of California enriches the state to the extent of approximately \$50,000 in the creation of new industries, in additional population, in the building of homes and the distribution of wealth among those who help to build up this great commonwealth. Assuming the development of 100,000 horsepower annually by the companies of this section, it would mean that the material wealth of this Pacific Coast section would be added to by the sum of \$5,000,000,000 annually contributed in connection with the stable increase of power, not for today but for all time.

To sum up, let the companies here represented determine that this convention has been helpful to them in confirming in their minds the necessity, first, for better public relations; second, better care and concern in the welfare of their employees; third, better service to their consumers; fourth, better interpretation to the public mind of what their industry means to those immediately served.

ACCOUNTING COMMITTEE

The report of the accounting committee submitted by P. R. Ferguson, Southern Sierras Power Company, chairman of the section, was of great interest to the members of the section as it told of the

work of the committee during the past year and the changes in the uniform system of accounts recommended by the national body which were suggested by the Pacific Coast division. The report in part was as follows:

On behalf of your committee, I desire to report that during the past year, the Accounting Committee have devoted the greater part of their time and energy in connection with the compilation of a Uniform System of Accounts for Electrical Corporations, to be national in scope. While other



M. H. Aylesworth, executive manager of the National Electric Light Association, was greatly in demand during the convention—and not only by the photographers.

matters were considered and discussed, this has been the one live topic.

At the national convention held in Pasadena last year, a system of accounts for electrical corporations was presented by the national accounting committee for adoption, with the idea that if found satisfactory, it would be recommended to the executive committee for adoption, and that the executive committee in turn present this to the national committee of Public Service Commissioners for adoption by all state regulatory bodies throughout the country.

The accounting committee of the Pacific Coast section were not entirely satisfied with the original draft presented, and after considerable discussion after the meeting were given the privilege of submitting such suggestions and changes as they deemed necessary.

A meeting of the Pacific Coast section accounting committee was held in Los Angeles in June, which other auditors and accountants prominent in the Pacific Coast electrical industry were invited to attend. After careful consideration, it was decided that, rather than attempt to change the classification as presented to the Pasadena meeting, an entirely new draft be prepared. After some four days of continuous work by the committee, a draft was prepared containing some 125 pages of typewritten matter, and submitted to the national committee as the recommendation of this section.

Your chairman attended a meeting of the national committee held in New York on February 24th of this year, at which time the revised scheme of accounts was presented for adoption, and we feel much gratified to learn that the classification finally adopted contained many of the suggestions offered by the Pacific Coast division, more particularly those relating to hydroelectric accounts. The whole matter, I understand, is now in the hands of the Committee of Railroad and Utility Commissioners, and copies have recently been submitted to the various public service commissions throughout the United States with the request that they report back to the committee this fall. I may add that this accounting scheme is at present undergoing careful analysis at the hands of the accounting officials of the California Commission.

The adoption of this uniform scheme would convey two very marked benefits to the electrical industry as a whole:

First—Giving us a classification of accounts modern in date and fitted to the present requirements of the industry.

Second—A uniform classification by the use of which comparative statements can be readily compiled, no matter in what state or under what regulatory body the electrical industry may be operating.

In addition to the meeting held in June, above mentioned, these meetings of the Accounting Section were also held at San Francisco on December 3, 1920, and at Los Angeles on March 25, 1921.

A brief resume of the proceedings of the meeting held in New York was then submitted and followed by a discussion of the proper form of balance sheets to be used by electric utilities, and the practical application of theoretical depreciation.

CONVENTION REGISTRATION

- Abernathy, J. E., Cashier Monterey County Bank of King City
 Affolter, Mr. and Mrs. P. H., Garland-Affolter Engineering Co., San Francisco
 Airey, Mr. and Mrs. F. J., Pacific States Electric Co., Los Angeles
 Alexander, I. W., San Joaquin Light & Power Corporation, Fresno
 Allen, F. L., Ontario Power Company, Ontario, Calif.
 Alvord, R. M., General Electric Company, San Francisco
 Anderson, J. A., Saddlery Merchant & Automobile Trimmings, Salinas
 Arbogast, Mr. and Mrs. G. E., Newbery Electric Company, Los Angeles
 Armstrong, G. E., Electrical World, San Francisco
 Aylesworth, M. H., National Electric Light Association, New York
 Bach, Mr. and Mrs. C. R., Manhattan Electric Supply Co., San Francisco
 Baker, A. G., Manager Salinas Land Company, Salinas
 Baker, Clark, National Lamp Works, Oakland
 Ballard, R. H., Southern California Edison Co., Los Angeles
 Balzari, R. A., Westinghouse Electric & Manufacturing Co., San Francisco
 Barnes, M. S., General Electric Company, San Francisco
 Barnhill, J. D., Evans & Barnhill, San Francisco
 Barr, Miss Marjorie, Fresno
 Barre, Mr. and Mrs. H. A., Southern California Edison Co., Los Angeles
 Billica, H. J., Western Electric Company, San Francisco
 Black, J. B., Great Western Power Company, San Francisco
 Blodgett, L. D., Bakersfield
 Baurhyte, Mr. and Mrs. Wm., L. A. Gas & Electric Corp., Los Angeles
 Berry, W. S., Western Electric Company, San Francisco
 Bibbins, Mr. and Mrs. T. E., Pacific States Electric Co., San Francisco
 Booth, P. H., Edison Electric Appliance Company, Ontario
 Bostwick, Henry, Pacific Gas & Electric Company, San Francisco
 Boyd, F. E., General Electric Company, San Francisco
 Bragg, R. C., Vallejo Light & Power Company, Vallejo
 Braun, Mr. and Mrs. C. F., C. F. Braun & Co., San Francisco
 Bray, J. C., Cashier, First National Bank, King City
 Bridges, J. E., Westinghouse Electric & Manufacturing Co., San Francisco
 Britton, Mr. and Mrs. E. N., Journal of Electricity and Western Industry, San Francisco
 Britton, John A., Pacific Gas & Electric Company, San Francisco
 Brush, Mrs. C. G., San Francisco
 Browne, E. E., Browne-Langlais Electric Construction Co., San Francisco
 Buswell, J. M., San Joaquin Light & Power Corp., Fresno
 Camp, W. E., General Electric Company, San Francisco
 Campbell, Geo. A., Truckee River General Electric Company, Reno
 Carlin, Mr. and Mrs. J. C., Fresno
 Carpenter, A. B., San Joaquin Light & Power Corp., Fresno
 Case, Joe, General Electric Company, Los Angeles
 Chamblin, C. L., California Electric Construction Co., San Francisco
 Chapman, Lloyd W., Journal of Electricity and Western Industry, San Francisco
 Clancy, W. B., Riverside
 Clapp, R. B., Clapp & LaMoree, Los Angeles
 Colwell, J. I., Western Electric Company, Seattle
 Cone, D. I., Pacific Telephone & Telegraph Company, San Francisco
 Conlisk, Mr. and Mrs. C. W., San Francisco
 Cooper, H. M., Pacific Gas & Electric Co., Auburn
 Copley, A. W., Westinghouse Electric & Manufacturing Co., Pittsburgh
 Courtwright, Mr. and Mrs. H. H., Valley Electrical Supply Co., Fresno
 Cowles, Mr. and Mrs. R. R., Pacific Gas & Electric Co., San Francisco
 Crawford, P. O., California-Oregon Power Co., San Francisco
 Creed, Wigginton E., Pacific Gas & Electric Co., San Francisco
 Criddle, Southern Sierras Power Company, Riverside
 Crilly, J. E., Habirshaw Electric Cable Co., San Francisco
 Curtiss, Mr. and Mrs. Geo. H., Electric Railway & Manufacturers' Supply Company, San Francisco
 Cutten, Mr. and Mrs. C. P., Pacific Gas & Electric Co., San Francisco
 Daley, Mr. and Mrs. Harry H., Majestic Electric Development Company, San Francisco
 Davis, L. W., Westinghouse Lamp Company, Los Angeles
 Deimling, W. L., Southern California Edison Co., Los Angeles
 Dickey, C. H., New York
 Dodge, W. T., California Railroad Commission, San Francisco
 Doolittle, H. L., California Railroad Commission, Los Angeles
 Dougherty, P. J., Mayor of Monterey, Monterey
 Downing, Mr. and Mrs. P. M., Pacific Gas & Electric Co., San Francisco
 Doyle, E. N., Western States Gas & Electric Co., Stockton
 Dunbar, W. R., Westinghouse Electric & Manufacturing Co., San Francisco
 Durfey, W. E., San Joaquin Light & Power Corp., Fresno
 Edgerton, E. O., San Francisco
 Estcourt, Miss Doris, Journal of Electricity and Western Industry, San Francisco
 Euler, W. G. B., Great Western Power Co., San Francisco
 Ewing, Mr. and Mrs. C. W., Berkeley
 Fenton, J. H., Westinghouse Electric & Manufacturing Co., Los Angeles
 Ferguson, P. R., Southern Sierras Power Co., Riverside
 Fisher, Mr. and Mrs. R. E., Pacific Gas & Electric Co., San Francisco
 Florence, E. W., Pacific Gas & Electric Co., Sacramento
 Foster, Miss Ruth, Jour. of Elec. and Western Industry, San Francisco
 Frost, Mr. and Mrs. W. L., Southern California Edison Co., Los Angeles
 Galbraith, L. F., Pacific Gas & Electric Co., Oakland
 Gamble, S. E., Westinghouse Electric & Manufacturing Co., San Francisco
 Garbutt, H. L., Westinghouse Electric Co., San Francisco
 Gardiner, H. W. L., Jour. of Elec. and Western Industry, San Francisco
 Garland, A. E., Garland-Affolter Engineering Co., San Francisco
 Gents, R. A., Pacific Gas & Electric Co., Oakland
 George, F. R., Pacific Gas & Electric Co., San Francisco
 George, Phillip S., Coast Valleys Gas & Electric Co., Salinas
 Gibson, B. Y., Edison Electric Appliance Co., San Francisco
 Gilman, Samuel W., John A. Roebling's Sons Co., San Francisco
 Gough, P. G., Listenwaller & Gough, Los Angeles
 Gould, George S. Jr., Real Estate, Salinas
 Graham, N. W., Graham-Reynolds Co., Los Angeles
 Graham, George S., Fairbanks-Morse & Co., Los Angeles
 Gray, F. S., John A. Roebling's Sons Co., San Francisco
 Gray, Geo. A., Geo. A. Gray Co., San Francisco
 Gregory, S. B., Arrow Electric Co., San Francisco
 Grunsky, Miss Clotilde, Jour. of Elec. and Western Industry, San Francisco
 Hall, A. J., Ontario Power Company, Ontario
 Hall, C. B., Illinois Electric Co., Los Angeles
 Halloran, Arthur H., McGraw-Hill Book Company, San Francisco
 Halpenny, H., Southern Sierras Power Co., Riverside
 Hamilton, W. C., Secretary, Chamber of Commerce, King City
 Handley, W. F., Secretary, Chamber of Commerce, Salinas
 Harbinson, R. C., San Bernardino
 Harford, Mr. and Mrs. A. K., Universal Electric Co., San Francisco
 Harper, H. L., Western Electric Company, Los Angeles
 Harper, James, Real Estate, Pacific Grove
 Harris, Mr. and Mrs. D. E., Pacific States Electric Co., San Francisco
 Harris, Mr. and Mrs. R. G., Standard Underground Cable Co., San Francisco
 Hartley, V. W., California Cooperative Campaign, San Francisco
 Hartzell, Harry F., Baker-Joslyn Company, San Francisco
 Haskin, J. R., Southern California Edison Co., Los Angeles
 Hatfield, H. P., Chamber of Commerce, Vallejo
 Haver, S. C. Jr., Southern California Edison Co., Los Angeles
 Hearne, Mr. and Mrs. N., Southern California Edison Co., Ventura
 Heise, Mr. and Mrs. C. E., Western Electric & Manufacturing Co., San Francisco
 Henley, Lloyd, San Joaquin Light & Power Corp., Fresno
 Henry, J., Manager Southern Pacific Milling Co., King City
 Herbert, C. O., Westinghouse Electric & Manufacturing Co., San Francisco
 Heryford, H. B., Pacific Gas & Electric Co., Red Bluff
 Hicks, J. Wesley, W. E. Hicks Co., San Francisco
 Hillis, Mr. and Mrs. C. C., Electric Appliance Co., San Francisco
 Hillis, Master Gervais
 Hodghead, Beverly L., John A. Roebling's Sons Co., San Francisco
 Hoce, Mr. and Mrs. W. H., Johns-Manville, Inc., San Francisco
 Holloway, A. E., San Diego Gas & Electric Co., San Diego
 Holst, B. C., W. N. Matthews & Co., St. Louis
 Holterman, R. I., Fobes Supply Co., San Francisco
 Hopkins, R. A., Westinghouse Electric & Manufacturing Co., Los Angeles
 Hoxie, H. H., Holabird & Hoxie, San Francisco
 Hughes, H. H., Westinghouse Electric & Manufacturing Co., San Francisco
 Hunt, C. R., The Robbins & Myers Co., San Francisco
 Hutchinson, E. C., Pelton Water Wheel Co., San Francisco
 Ingalls, Mr. and Mrs. C. E., Crocker-Wheeler Co., San Francisco
 Jackson, H. F., Great Western Power Co., San Francisco
 Jacobs, Mr. and Mrs. Gaskell S., Consulting Engineer, San Francisco
 Jamison, J. H., Westinghouse Electric & Manufacturing Co., Los Angeles
 Jarnagin, J. H., San Joaquin Light & Power Corp., Selma
 Jeffery, William, Jeffery Hotel, Monterey
 Jensen, Mr. and Mrs. Peter L., The Magnavox Co., Oakland
 Jeppesen, A. M., Pacific Gas & Electric Co., San Mateo
 Jochmus, A. C., Secretary, Chamber of Commerce of Pacific Grove
 Johnson, Carl E., United States Electric Manufacturing Co., Los Angeles
 Johnson, E. C., Pacific Gas & Electric Co., Marysville
 Jones, Allen G., Special Solicitor, General Electric Co., San Francisco
 Jones, H. H., San Diego Consolidated Gas & Electric Co., San Diego
 Jorgensen, L., Consulting Engineer, San Francisco
 Jorgensen, H. G., City Attorney, Pacific Grove
 Joy, Mr. and Mrs. Al., Fresno
 Kahn, Mr. and Mrs. Samuel, Western States Gas & Electric Co., Stockton
 Kalb, E. N., Fresno
 Kelley, Arthur R., San Francisco
 Kenny, C. B., Ne-Page-McKenney Co., San Francisco
 Kimball, G. E., Calif. State Industrial Accident Commission, San Francisco
 King, John, Hemet
 Klauber, Mr. and Mrs. L. M., San Diego Gas & Electric Co., San Diego
 Knopp, Otto A., Pacific Gas & Electric Co., San Francisco
 Koontz, Mr. and Mrs. John A. Jr., Great Western Power Co., San Francisco
 Koster, Frederick, U. S. Chamber of Commerce
 Kramer, E., Westinghouse Electric & Manufacturing Co., San Francisco
 Kuster, Mr. and Mrs. J. D., Pacific Gas & Electric Co., San Jose
 Laine, Frank, Westinghouse Electric & Manufacturing Co., San Francisco
 Lakey, Arthur B., Kingsbury Machine Works, San Francisco
 LaMoree, C. D., Clapp & LaMoree, Los Angeles
 Leach, Frank A., Pacific Gas & Electric Co., San Francisco
 Lemmon, H. A., Stone & Webster, Boston
 Lewis, F. B., Southern California Edison Company, Los Angeles
 L'Hommedieu, Westinghouse Electric & Manufacturing Co., San Francisco
 Listenwaller, C. E., Listenwaller & Gough, Los Angeles
 Lindquist, Mr. and Mrs. E. W., Allis-Chalmers Co., San Francisco
 Lisberger, Mr. and Mrs. S. J., Pacific Gas & Electric Co., San Francisco
 Lokensgard, M. O., Jour. of Elec. and Western Industry, San Francisco
 Lothridge, L. S., Southern California Edison Co., Los Angeles
 Lynch, C., Aluminum Company of America, San Francisco
 MacMullen, Mr. and Mrs. T. D., Majestic Electric Heater Co., San Francisco
 Manuel, B. S., Electric Railway & Manufacturers' Supply Company, San Francisco
 Matthews, G. L., Landowner, King City
 Mauzey, P. B., Laundry Owner, Pacific Grove
 Markee, E. P., Edison Lamp Works, San Francisco
 Martin, Carmel, Attorney, Monterey
 Masson, R. S., Arizona Power Co., Prescott, Arizona
 Mastick, R. W., Pacific Telephone & Telegraph Co., San Francisco
 Maxwell, M. P., R. Thomas & Sons, New York

McCaffery, J. E., California Railroad Commission, San Francisco
 McCann, E. G., Pacific Gas & Electric Co., San Francisco
 McFadden, Mr. and Mrs. R. C., Southern Calif. Edison Co., Los Angeles
 McGraw, James H., McGraw-Hill Publishing Company, New York
 McInnis, W. H., Truckee River General Electric Company, Reno
 Miller, John B., Southern California Edison Co., Los Angeles
 Miller, Stephen I., Manager Northwest Electric Service League, Dean of College of Business Administration, University of Washington, Seattle
 Mini, Jos., Pacific Gas & Electric Co., San Francisco
 Monahan, J. G., Sangamo Electric Co., Los Angeles
 Monges, R. F., General Electric Company, San Francisco
 Monroe, R. A., Pacific Gas & Electric Co., San Francisco
 Moody, Wm. M., I. P. Morris Co., San Francisco
 Moore, L. J., San Joaquin Light & Power Corp., Fresno
 Morphy, A. E., Southern California Edison Co., Los Angeles
 Murphy, Ray W., Westinghouse Lamp Works, San Francisco
 Musladin, Chas. R., Alexander & Lavenson, San Francisco
 Myers, A. J., Wagner Electric Co., San Francisco
 Myrtle, Mr. and Mrs. F. S., Pacific Gas & Electric Co., San Francisco
 Neelands, W. R., Southern California Edison Co., Los Angeles
 Newbert, L. H., Pacific Gas & Electric Co., Oakland
 Newlin, M. E., San Joaquin Light & Power Corp., Fresno
 Nichols, W. F., King City Mercantile Co., King City
 Nittinger, Mr. and Mrs. V. E., Fairbanks-Morse & Co., San Francisco
 Noack, Mr. and Mrs. H. R., Pacific States Electric Co., San Francisco
 Noble, Mr. and Mrs. Geo. O., Westinghouse Electric & Manufacturing Co., Los Angeles
 Northcutt, C. S., Pacific Gas & Electric Co., Modesto
 Northmore, E. R. and Miss Helen, Los Angeles Gas & Electric Co., Los Angeles
 Nott, Mr. and Mrs. L. A., Sangamo Electric Co., San Francisco
 O'Brien, H. F., Westinghouse Electric & Manufacturing Co., Los Angeles
 O'Hara, G. D., Electric Superintendent, Del Monte Properties Co.
 Olmsted, Charles, Superintendent Del Monte Properties Co.
 Pahl, A. J., K-P-F Electric Co., San Francisco
 Patterson, F. W., General Electric Company, Schenectady, N. Y.
 Peat, A. E. and family, San Joaquin Light & Power Corp., Fresno
 Peirson, Chas. H., Southern California Edison Co., Los Angeles
 Peters, Clifton, Southern California Edison Co., Los Angeles
 Perkins, Mr. and Mrs. H. B., J. H. Parker, Inc., San Francisco
 Piatt, F. C., Pacific Gas & Electric Co., San Francisco
 Pioda, C. L., Spreckels Sugar Co., Salinas
 Pollard, Mr. and Mrs. J., Coast Valleys Gas & Electric Co., Salinas
 Poyer, Mr. and Mrs. C. E., Edison Storage Battery Supply Co., Los Angeles
 Price, Mr. and Mrs. Walter F., California Electrical Cooperative Campaign, San Francisco
 Ramstad, Mr. and Mrs. A. G., Pacific Gas & Electric Co., San Jose
 Ready, Lester I., California Railroad Commission, San Francisco
 Reynolds, A. C., Ontario Power Co., Ontario
 Ridgeway, H. G., Pacific Gas & Electric Co., San Rafael
 Rooker, Geo. N., Western States Gas & Electric Co., Stockton
 Roseberry, Senator and Mrs. L. H., Los Angeles
 Ross, Mr. and Mrs. Harry C., Pacific Gas & Electric Co., Fresno
 Russell, Sam, H. B. Squires Co., San Francisco
 Ryan, Prof. H. J., Stanford University
 Sanderson, H. E., Pacific Coast Manager, Bryant Electric Co., San Francisco
 Sawyer, W. B., United States Steel Company, San Francisco
 Schnapp, M. H., General Electric Company, San Francisco
 Scrugham, T. G., Reno
 Searing, E. D., Portland Light & Power Co., Portland, Oregon
 Seaver, Mr. and Mrs. W. H., U. S. Steel Products Co., San Francisco
 Shaw, Sidney B., Pacific Gas & Electric Co., San Francisco
 Shepard, W. M., California Oregon Power Co., San Francisco
 Sherman, H. E., Illinois Electric Co., Los Angeles
 Sias, Thomas C., Safety Electric Products Co., Los Angeles
 Sibley, Mr. and Mrs. Robert, McGraw-Hill Company of California, San Francisco
 Sibley, Miss Catherine
 Simpson, Mr. and Mrs. T. W., Federal Electric Co., San Francisco
 Smalley, D. D., San Joaquin Light & Power Corp., Fresno
 Smith, E. A., Coast Valleys Gas & Electric Co., Monterey, and Pacific Grove
 Smith, Glenn D., Ontario Power Co., Ontario, Cal.
 Smith, R. C., Jour. of Elec. and Western Industry, San Francisco
 Smith, Vinton Standard Underground Cable Co., San Francisco
 Smith, W. C., General Electric Co., San Francisco
 Snell, T. W., Coast Valleys Gas & Electric Co., Pacific Grove
 Spring, Arthur L., California Electrical Cooperative Campaign, Los Angeles
 Starr, Rex, San Joaquin Light & Power Corp., Fresno
 Stearns, Mr. and Mrs. W. G., Standard Underground Cable Co., San Francisco
 Sterling, Mr. and Mrs. R. H., Santa Barbara Electric Co., Santa Barbara
 Steel, Miles, Benjamin Electric Mfg. Co., San Francisco
 Steele, H. G., U. S. Electric Mfg. Co., Los Angeles
 Steele, I. C., Pacific Gas & Electric Company, San Francisco
 Stoddard, Mr. and Mrs. Elgin, Chas. C. Moore & Co., San Francisco
 Strauch, A., Pacific Gas & Electric Co., San Francisco
 Sultan, Walter D., Pacific Gas & Electric Co., San Francisco
 Sunderland, Al., Fresno
 Sutherland, N. R., Pacific Gas & Electric Co., San Francisco
 Taylor, Mr. and Mrs. Samuel H., Electric Railway & Manufacturers' Supply Co., San Francisco
 Thomas, Mr. and Mrs. F. S., Valley Electrical Supply Co., Fresno
 Thomas, C. C., Westinghouse, Church & Kerr, Pasadena
 Thompson, C. E., Westinghouse Lamp Co., San Francisco
 Thorup, C. N., Real Estate, Salinas
 Tobey, J. O., Pacific Gas & Electric Co., Sacramento
 Trott, Southern California Edison Co., Los Angeles
 Ulrey, L. B., President First National Bank, King City
 Valk, E. E., General Electric Co., Los Angeles
 Vandercook, A. B., Western Electric Co., Los Angeles
 Van Kuran, K. E., Westinghouse Electric & Manufacturing Co., Los Angeles
 Vaughan, R. M., California Railroad Commission
 Vincent, Mr. and Mrs. W. G., Pacific Gas & Electric Co., San Francisco
 Voyer, L. E., General Electric Co., San Francisco
 Walbridge, R. R., Southern California Edison Co., Porterville
 Wakeman, G. F., Edison Storage Battery Co., San Francisco
 Walker, Chas. W., Ontario Power Co., Ontario, Calif.
 Walker, Ben R., Fresno
 Waters, Mrs., San Francisco

Weaver, S. L., President Los Angeles Chamber of Commerce, Los Angeles
 Wentworth, P. M., Truckee River General Electric Co., Reno
 Whitehead, E. F., Cleveland, Ohio Electric Vacuum Cleaner Co.,
 Wilson, Paul, San Joaquin Light & Power Corp., Fresno
 Wishon, Mr. and Mrs. A. Emory, San Joaquin Light & Power Corp., Fresno
 Wishon, A. G., San Joaquin Light & Power Corp., Fresno
 Woodward, O. F., Fresno
 Wright, B. F., Owner Palace Drug Store, Monterey
 Wurfl, W. C., Electric Supply Distributing Co., Los Angeles
 Young, Garnett, Garnett Young Co., San Francisco
 Yost, C. Z., Pacific Gas & Electric Co., San Francisco

DISCUSSION ON RESERVOIR EVAPORATION

BY C. E. GRUNSKY

(The complexity of the problem of determining the rate of evaporation from reservoirs has been appreciated by central station engineers for some time, but until the present time little has been done to solve the problem. The report of the sub-committee of the Pacific Coast Division of the National Electric Light Association for the collection of data on Evaporation from Reservoirs brought out this interesting discussion by a well-known consulting engineer of San Francisco.—The Editor.)

The report of the Sub-Committee of the National Electric Light Association on Evaporation (1920-21), should be regarded in the light of a progress report. It presents some useful data on the subject of evaporation from open water bodies. It does not purport to present a comprehensive review of the problem, but does point out some of the difficulties in the solution thereof. It gives some inkling of the complexity of the factors which affect the rate of evaporation from large exposed water surfaces, and cites some results of observations which may be accepted as fairly representing the monthly and annual evaporation rates from the water surface of reservoirs in different parts of California.

Need of Specific Data on Conditions of Test

The report includes in its appended material, however, records of evaporation from various localities which, in the form in which presented, had best remain unpublished. To be somewhat specific in this particular, attention may be called first to the intelligent presentation of data in the "Table of Precipitation, Evaporation, Absorption, Etc., at the Gate House of the Arrowhead Reservoir, at Little Bear Valley," by H. B. Hedges, C. E. The data here presented are in very acceptable form, and are accompanied by satisfactory explanations. The table showing the results of evaporation records at Crane Valley Reservoir of the San Joaquin Light & Power Co. gives no information relating to location or size of pan from which the water loss was measured. Reference to the text of the committee's report discloses that the record was "by the floating pan method." What is the size of the pan? Is the water surface in the pan kept at (practically) the level of the water outside? Is the pan afloat on the reservoir or on the water of the forebay? In deep or shallow water? What were the mean monthly temperatures? Temperature of the air in this connection is of prime importance. The table of evaporation from Upper Klamath Lake in the form given in the report is without value to the student of evaporation. If the 53.4 inches represent a record of the annual water loss from a floating pan it should be so noted. Furthermore, Upper Klamath Lake is a shallow body of water with an exceptionally flat bottom and is located in a wind swept area. These are factors making for a high rate of evaporation, and might lead to an acceptance of the government figures as representing the actual average annual evaporation from the lake surface. This would be an assumption of an evaporation rate, however, which the writer considers highly improbable. (The U. S. Reclamation Service in its annual report of 1904-5 notes the annual evaporation at Keno on Klamath river at the outlet of Lower Klamath Lake at about 38 inches, but also without explanation of the apparatus or method used in determining this rate.)

In the matter of the Arizona Evaporation Records for 1920, which are appended to the report, no information is presented relating to the apparatus used. It is to be presumed that the 4 ft. circular pans raised a few inches above ground by timber supports, as prescribed for "Class A" Weather Bureau stations were used. However, any one who has knowledge of the climatic conditions of Arizona will hesitate to accept the Yuma record as comparable with the other records and may well suspect that the pan was set in the ground instead of being above ground. The record, as presented in the table, is of no value, in other words, except to call attention to the fact that some sort of evaporation record has been kept at the points named.

The same comment applies to the table giving California evaporation records. It is known that each of the three stations Chula Vista, Dodgeland about 16 miles southwest from Chico (not Dixieland as appears in the table) and Oakdale (Woodward Reservoir 8 miles North of Oakdale) are equipped with standard Weather Bureau apparatus, 4 ft. circular pans, 10 inches deep with 8 inches of water, supported a few inches above ground on timber supports, and that the pan in Lake Tahoe, is 4 ft. in diameter, 10 inches deep and is located about 600 feet south of the lake outlet. The pan at the Woodward reservoir is on the summit of a knoll in a region where the soil is very dry in summer and the ground becomes exceptionally warm.

Obtaining Dependable Results

Evaporation records from pans placed above ground as prescribed by the U. S. Weather Bureau have very little value to the student of evaporation except as an aid in fixing the relative rates of evaporation from month to month.

The conclusion of the Committee that the monthly and annual evaporation rate is best determined by the floating pan method is sound, but even the floating pan must be used with some caution as pointed out in several of the papers accompanying the report. The floating pan is not dependable if the pan is in shallow water over a flat bottom, nor yet if it is placed in a confined area such as a forebay. Its water surface must never be above the surface of the surrounding water.

Where the time is not available for securing a floating pan record, dependable results can be obtained by using the relation already fairly well determined and shown by curves in the appendix to the report, which exists between mean monthly atmospheric temperature and the mean daily rate of evaporation. By this temperature method the annual

depth of evaporation is ascertained. This can then be apportioned to the several months on the basis of any observations that may be available throughout the year.

Attention may be called in this connection to the fact that many evaporation records show a far greater rate of evaporation for the same mean temperature in the spring of the year than in the fall of the year. This fact is at variance with the theoretic conclusions presented in the paper by Mr. N. W. Cummings, made a part of the report, according to which the rate of evaporation should be less while the body of water is being warmed up in the spring than while it is cooling off in the fall.

To make the report of the Committee more useful some such explanation as herein attempted should be added before it is widely distributed.

Evaporation Under Typical Conditions

To illustrate the temperature method of estimating annual evaporation, as suggested by the writer, a table is below presented for typical conditions in the Sierra Nevada Mountains, California, at altitudes of 2,000, 4,000 and 6,000 feet. The figures presented in the table are based on the curve and formula showing the probable relation between mean monthly temperature and the average daily rate of evaporation, which will be found in the writer's contribution to the Committee report and also in the Journal of Electricity of Jan. 1st, 1921.

As a further illustration of the dependability of the temperature method it may be noted that the evaporation from Arrowhead Reservoir, San Bernardino Co., California, calculated by the mean monthly temperature method for the period covered by the records submitted by Mr. Hedges, above referred to, checks fairly well with the results of the observations. The observed evaporation at Arrowhead Reservoir from March 1st, 1895 to the end of the year was 36.8 inches. The evaporation calculated by use of the mean monthly temperatures for the same period is 34.7 inches. The observed evaporation during the year 1896 was 35.8 inches to be compared with 38.5 inches by calculation based on atmospheric temperature. For the full period of 22 months for March 1895 to the close of the year 1896, the observed evaporation was 72.6 inches, while that determined by calculation based on mean monthly temperatures is 73.2 inches.

Such checks as these are further evidence that the curve and formula suggested by the writer will be found useful and may be accepted as dependable in cases where direct measurement of evaporation can not be made.

EVAPORATION FROM OPEN BODIES OF WATER IN THE SIERRA NEVADA MOUNTAINS, CALIFORNIA AT VARIOUS ALTITUDES
Subject to Correction for Points where Temperatures Depart from Those Noted in the Table
Based on the Grunsky Evaporation Curve

Month	ALTITUDE 2000 FEET Evaporation			ALTITUDE 4000 FEET Evaporation			ALTITUDE 6000 FEET Evaporation		
	Mean Monthly Temp.	Feet per Day	Feet per Month	Mean Monthly Temp.	Feet per Day	Feet per Month	Mean Monthly Temp.	Feet per Day	Feet per Month
Jan.	42	.0046	.142	35	.0038	.118	32	.0036	.112
Feb.	44	.0049	.137	37	.0041	.115	35	.0040	.112
Mar.	48	.0061	.189	41	.0048	.149	38	.0045	.139
Apr.	53	.0077	.231	46	.0060	.180	43	.0056	.168
May	60	.0106	.329	52	.0078	.242	49	.0071	.220
June	72	.0177	.531	61	.0116	.348	57	.0101	.303
July	75	.0199	.618	68	.0157	.487	63	.0131	.406
Aug.	74	.0192	.595	67	.0150	.465	61	.0120	.372
Sept.	68	.0151	.453	59	.0107	.321	55	.0092	.276
Oct.	58	.0097	.301	51	.0075	.233	49	.0071	.220
Nov.	50	.0066	.198	43	.0053	.159	39	.0047	.141
Dec.	43	.0049	.152	34	.0037	.115	32	.0036	.112
Year			3.88			2.93			2.58

Note: In some localities the annual evaporation should perhaps be distributed to the several months at amounts varying from those noted in the table for the reason that the rate of evaporation, in some places, is greater at the same mean monthly temperature of the atmosphere in the spring months than in the fall months.



Banquet of the Pacific Coast Division N. E. L. A., following the Industrial Conference Friday Afternoon

Pacific Coast Industrial Conference

(The conference held on the afternoon of the last day of the convention brought out facts showing the absolute interdependence of all industries in the West with the electrical industry. While only short excerpts of the speeches are given in this report many of the speeches will be reproduced in later issues of Journal of Electricity and Western Industry.—The Editor.)

In opening the industrial conference L. H. Newbert, president of the Pacific Coast Division N. E. L. A., said: "We believe that when the meeting has been concluded, that we, the electrical industry, will have proved our case—that there is a definite relation between our power companies and industry. When this is realized, the development of our water powers will be made easier, and the big problem of financing will have been solved to at least some extent, because the understanding will enable us to better meet our financial needs." This was the idea of the meeting, to present the case of the electrical and other public service industries and under John B. Miller, president of the Southern California Edison Company, who presided over the meeting the case was proved, step by step.

Robert Sibley, president of the McGraw-Hill Company of California and Editor of the Journal of Electricity and Western Industry, the first speaker, was introduced by Mr. Miller, who said, "You have all been doing wonderful work in giving service, but in carrying that work there has been one who has been of the greatest service through the columns of the Journal of Electricity and Western Industry. He has worked month after month and year after year for the ideal of service to the public and the industry." Mr. Sibley then illustrated the elements of electricity and by means of slides and charts showed the wonderful things that have been accomplished by the electrical industry in the West, and the important part played by electricity in the industries of the West. In agriculture, mining, canning of fruits, refrigeration, the electrification of railroads, and the other industries, he showed that electricity played the basic role. The West was shown to be progressing more rapidly than the rest of the United States and the conclusions gathered from an exhaustive survey made through the cooperative effort of fifty-eight power companies and an exhaustive questionnaire sent out to four-thousand industrial plants, he predicted the great future of the country west of the Rocky Mountains and stated that California would have a population of ten million by 1950.

H. G. Butler, power administrator of the California Railroad Commission was the next speaker who, forecasting the future from the past, stated that in the past five years the average demand has increased over ten per cent each

year, with a peak load in California last year of 893,000 horsepower. He stated, "These statistics can be summarized thus: In 1925 the 386,000 horsepower which was under construction in the fall of last year will have been entirely absorbed, and the resources will be 175,000 horsepower short of requirements, even if all the steam plants are used to the limit. In other words, in four years the power companies of the State, if they are to meet needs in the future as great in proportion as those they have met in the past, must plan for, finance, construct, and place in operation three and one-third such plants as Caribou, or two and two-thirds plants of the capacity of Hetch Hetchy. These figures presuppose perfect interconnection and a complete utilization of the power available to every company. If at any time there is to be a local surplus which is not used, the figures must be correspondingly increased."

Bringing out the fact that the estimates which had been made on the power resources of the state varied and that a safe estimate was between 5,000,000 and 7,000,000 hp., he stated that when the 5,000,000 hp. had been developed the economic limit would have been reached and that limit would be reached within twenty years at the present rate of development. The solution suggested was in the utilization of all of the Western resources and the use of interconnected systems.

Following Mr. Butler's speech, one of the most powerful addresses of the convention was made by W. E. Creed, president of the Pacific Gas and Electric Company, who spoke on the necessity of securing a wide distribution of the common stocks of public utility industries if the development of the West is to continue. He said in part, "In California a most conservative estimate of our needs in the next ten years is from six to eight hundred millions of dollars to finance and meet the regular growth in the demand for electrical energy. By financing, we mean securing new money to build new generating plants, new transmission lines, new distribution lines and new sub-stations, and that money cannot come out of the revenues of these companies." To show that this was impossible he stated that the Pacific Gas and Electric Company in 1920 "distributed in wages in round figures, eleven million dollars, and distributed for interest to

the wages of capital, five million dollars. It is axiomatic that the wages of capital must be paid or capital will not perform any more than labor will perform if its wages are not paid. If we tried to finance new construction out of revenue it would be necessary to increase rates four or five times over. That is, for every dollar of increased gross revenue which we receive, we must invest in the industry from four to five dollars of new capital." In closing his speech Mr. Creed stated that while sixty-five or seventy per cent of the new money needed could be obtained from the "mortgage lender" or the bond buyer, the remainder must come from the investor. "We can hope to distribute our bonds, perhaps some of our preferred stocks in other sections of the country, but we must look here in California to our own people to furnish the money in these great enterprises." In closing he stated, "This conception of the public service industry as the vanguard of growth and development must be brought home to our people. They must see that great economic truth; they must understand it and feel it, and we on our part must deserve the cooperation which we ask."

R. H. Ballard, vice-president and general manager of the Southern California Edison Company then spoke on the "Outstanding Features of the National Situation" and told how the East was just coming to a realization of the fact that the large super-power zones that were being talked of there had been practiced in the West for many years. The main topics of discussion at the national convention he stated were those of customer ownership of securities and the cooperation within the industry, both of which were credited to California.

The question of "Why Every Citizen Is Interested," was ably presented by A. Emory Wishon, general manager of the San Joaquin Light and Power Corporation, who said, "Our industry, and we are proud of it, is that great electrical industry that has made the world today possible and upon which transportation, communication, light, heat and power depends. But the trouble is that the ordinary citizen does not understand these facts, does not understand what our electrical industry means to him in dollars and cents to his individual business; and how his business suffers in dollars and cents when we fail to develop. When he understands that he personally, or his business is affected, we will have the legislation that will make the development possible. We who study the West and know the problems in the development of the West, know that the West will not develop ahead of its hydroelectric resources. * * Our development means the development of your business. It means an increasing pay roll; it means more work for the laboring man in the state of California, and the politician or the political party that stops that development, penalizes the people of the state to the extent of approximately three hundred million dollars annually."

At the banquet held on Friday evening, June 10, John A. Britton, vice-president and general manager of the Pacific Gas & Electric Company, acted as toastmaster and in his usual hearty and inimitable manner introduced each of the speakers by telling of their qualifications to speak authoritatively on the subjects.

The first speaker was M. H. Aylesworth, executive manager of the National Electric Light Association, who spoke of the harmony throughout the country of those interested in the development of the electrical industry which he held essential for its growth and expansion. He said that the methods of the electrical industry must be told to all the people if they are expected to cooperate with the industry. The next speaker, Mr. James H. McGraw, president of the McGraw-Hill Company, said, "I feel no fear that industry will not come to the Pacific Coast. You have the population, the wealth, and there is every reason why the people should come; and where there are people, there will be industry."

There is no fear for the future of the electrical industry, for it is in the hands of men who realize their responsibility and will meet its needs."

The points brought out by Sylvester Weaver, president of the Los Angeles Chamber of Commerce, were that the ownership of the public service corporations is a sign of the great confidence the people in the industry have in it. This, he stated, is a source of strength and an important factor in its success. Mr. Weaver brought out the point that power is absolutely essential in an industrial growth and most emphatically suggested that the message in the afternoon session be given to all of the Chambers of Commerce. The power companies have a larger duty to perform than that of serving the immediate needs of the states bordering on the Pacific Ocean. The Pacific Coast is to become the future theatre of the business of the country. Two-thirds of the population of the world live across the Pacific Ocean and need the products of our industries conveyed to them in ships under the American flag. Al Joy, speaking as the representative of the California Raisin Growers' Association, stated that cooperation had made possible the development of the raisin industry from 70,000 tons annually with 20,000 tons unsold in 1912 to 200,000 tons in 1920, every pound of which was sold at a profit to the grower. Before 1912 no raisins were sold at a cost over that of production, but since 1912 with the cooperative method it has all been sold at a profit to the producer. He said that the people of Fresno are buying the securities of the San Joaquin Light & Power Corporation because they consider it their company, realizing that as it grows so the valley will develop. The closing speech of the evening was made by Frederick J. Koster, chairman of the Board of Directors of the United States Chamber of Commerce. He stated that it is not good that man should live without effort, but it is good that effort should bring some of the luxuries of life. The development of the power resources of the state make this possible, that the most important factor in our development is the individual solvency of our citizenship. It is through cooperative organization, he said, that the conscience of the community can best find expression.

SPORTS

The following prizes were won in the sport contests:

GOLF

Kicker's Handicap

Lady's prize — Mrs. G. O. Noble, winner.

Men's prize — J. I. Colwell, Western Electric Co., Seattle, Wash.

Runner-Up

P. H. Booth, Edison Electric Appliance Co., Ontario, Cal.

Byllesby Trophy

J. O. Case, General Electric Co., Los Angeles, Cal.

Convention Cup

R. A. Monroe, Pacific Gas & Electric Co., San Francisco

Runner-Up

L. E. Voyer, Edison Lamp Works, San Francisco

Putting Contest for Ladies

Mrs. R. C. MacFadden

Runner-Up

Mrs. H. H. Daley

SWIMMING

Dash for Ladies

Mrs. Noble

Dash for Men

A. E. Morphy, Southern California Edison Co., Los Angeles.

TENNIS

Singles for Ladies

Mrs. S. J. Lisberger

Singles for Men

Gervais Hillis

A University Course in Practical Cost Accounting

BY PAUL B. KELLY

(When there are losses in your business, do your accounts show you exactly how they occurred? The proper subdivision of the Net Worth account is the subject of the ninth article of the practical accounting series, compiled by Paul Kelly, research accountant, under the supervision of Henry R. Hatfield, professor of accounting and Dean of the Faculties at the University of California.—The Editor.)

LESSON NO. 8 DOUBLE-ENTRY THEORY NET WORTH ACCOUNTS

In lesson 6, in the study of the three fundamental classes of accounts, it was pointed out that the net worth account would later be subdivided greatly in order to secure information about how increases and decreases in net worth occurred. This lesson will demonstrate the manner in which all the accounts shown in the summary of operations are derived from the net worth account.

Two Methods of Recording Sales

We saw that there were three fundamental classes of accounts corresponding to the three elementary accounts in the accounting equation,

$$\text{Assets} = \text{Liabilities} + \text{Net Worth.}$$

Any transaction involving a profit or a loss might be recorded in the accounts in the following way:

TRANSACTION	DR.	MDSE.	CR.	DR.	CASH	CR.	DR.	NET WORTH	CR.
1. Sold \$1,000 Mdse. for \$1,500.....			1000	1500					500
2. Sold \$1,200 Mdse. for \$1,000.....			1200	1000			200		

However, this record is defective because it does not record in the net worth account the total value received and the total value given out. This method shows in the net worth account only the **net profit** or the **net loss** on each transaction. It is possible to obtain full information regarding total sales and total **cost of sales** by making two entries for each transaction as here shown.

TRANSACTION	DR.	MDSE.	CR.	DR.	CASH	CR.	DR.	NET WORTH	CR.
1 (a) Gave out \$1,000 Mdse.....			1000				1000		
1 (b) Received \$1,500 Cash.....				1500					1500
2 (a) Gave out \$1,200 Mdse.....			1200				1200		
2 (b) Received \$1,000 Cash.....				1000					1000

Entries 1 (a) and 2 (a) credit the merchandise account with the amount of merchandise given out, for this asset is thereby decreased. At the same time these entries debit the net worth account with the same amount because net worth is for the moment diminished to that extent.

Entries 1 (b) and 2 (b) debit the cash account with the amount of cash received, for the cash balance is thus increased. These entries at the same time effect an equal credit to the net worth account. By using this scheme the **total outgo** and the **total income** are recorded in the net worth account. Of course, the net change in this account will be the same regardless of the method used.

Do not leave this point until you thoroughly master it. It is essential to your understanding of what follows.

The Sub-Divisions of the Net Worth Account

The second system of entries gives fuller information than the first. We shall use it a great deal in practice. It is manifest, however, that the record presented by the net worth account even in this form is entirely inadequate. We are securing complete information, but it is of little value because it is not classified. In order to obtain classified and detailed information about the increases and the decreases in net worth it is necessary to subdivide the net worth account into numerous parts.

Primary Subdivision of the Net Worth Account

The Net Worth Account is first split into two main accounts. One account represents the permanent investment or the Net Worth Balance at the beginning of the accounting period. The balance

shown in this account is not altered. The second account is used to record the changes in net worth that occur during the period due to losses and gains on many transactions. The balance of this account indicates the net profit or the net loss for the period. It eliminates the necessity of comparing the net worth figures of two different dates to determine this fact. The permanent investment account is given a

number of names, depending upon how the business is organized. If owned by one man this account is called the Net Worth Account; if the business is owned by two partners the permanent investment balance is shown by two such accounts; if the business is operated as a corporation this balance is represented by the sum of two accounts—Capital Stock Account and Surplus Account. The temporary net worth account, showing the losses and gains for the period, is called the Profit and Loss Account and is usually designated as the P & L Account. The diagram of our fundamental equation now appears—

$$\text{ASSETS} = \text{LIABILITIES} + \text{the sum of } \left\{ \begin{array}{l} \text{INVESTMENT BALANCE} \\ \text{and the} \\ \text{P \& L BALANCE} \end{array} \right.$$

Dr.		NET WORTH ACCOUNT						Cr.	
Jan.	2	Cost Mdse. Sold	J 3	1,000	Jan.	1	Net Worth Bal. at first of year	J 1	5,000
"	4	Light, H. & P. Bill.	J 4	10	"	2	Mdse. Sold	J 2	1,500
"	5	Cost Mdse. Sold	J 6	400	"	5	Mdse. Sold	J 5	600
"	7	Adv. in Chronicle	J 7	25	"	10	Mdse. Sold	J 10	300
"	8	Gasoline	J 8	6					
"	9	Postage	J 9	1					
"	10	Cost Mdse. Sold	J 11	200					
"	12	Adv. in Examiner	J 12	30					
"	13	Postage	J 13	2					
"	14	Repairs to Auto	J 14	12					
"	15	Gas and Oil	J 15	4					
"	16	Paid Rent	J 16	35					
"	31	To Balance		5,675					
		Total		7,400	Feb.	1	Total		7,400
							Balance		5,675

Subdivisions of the P & L Account

To obtain detailed information about the various kinds of increases and decreases, all that remains to be done is to divide the P & L Account into a sufficient number of income and expense accounts. The use of numerous expense and income accounts does not entail any considerable increase in the labor of bookkeeping. It takes no more work to make an entry to the proper income or expense account than it does to make the same entry to a conglomerate P & L Account.

by setting up an account for each class of transactions, and by entering the transactions in the proper accounts in the first place.

Sales Billed Account

The first subdivision of the P & L Account is called the Sales Billed Account. In this account we shall record the several amounts of income resulting from sales of merchandise. Understand that in a real set of accounts this would have been done in the first place.

Check each transaction in the following accounts.

Dr.		SALES BILLED ACCOUNT						Cr.	
					Jan.	2	Mdse. Sold.....	J 2	1,500
					"	5	Mdse. Sold.....	J 5	600
					"	10	Mdse. Sold.....	J 10	300
							Total.....		2,400

A set of detailed income and expense accounts is much like a properly kept stockroom. A separate container or bin is allotted to each kind of material. As the material is received, each kind is stored away

By footing this account as shown above, we obtain the total income from sales. The total cost of the merchandise sold can be obtained in the same manner by the use of a separate account.

Dr.		COST OF SALES BILLED ACCOUNT				Cr.	
Jan.	2	Cost Mdse.	J 3	1,000			
"	5	Cost Mdse.	J 6	400			
"	10	Cost Mdse.	J 11	200			
		Total		1,600			

at once in its proper bin instead of being piled indiscriminately. It takes no more labor to put the material in separate containers than it does to throw it into a general bin. The proper classification of income and expense items involves the same principle. It is merely a matter of system.

We are now going to demonstrate how neatly a system of this kind operates. We will first assume that we have an old-fashioned P & L Account into which all transactions have been entered. It appears at the top of the page.

Instead of merely wishing to know that the new net worth balance is \$5,675, we wish to know

1. The total income from sales.
2. The total cost of the merchandise sold.
3. The amount of each kind of the following expenses:
 - a. Rent.
 - b. Light, heat, and power.
 - c. Postage.
 - d. Advertising.
 - e. Automobile expense.

This information could be obtained by picking the items out of the net worth account shown above. It is manifest that if a great many transactions instead of a few had to be analyzed in that way, the procedure would demand a great deal of time and patience. The detailed information is easily secured

Expense Accounts

The various expense totals can be secured in like manner by creating accounts for them. (see page 35)

Be sure to check each item in these special accounts with the corresponding items in the old net worth account.

Investment Balance

In order to record the balance of net worth at the beginning of the period it is necessary to open the investment balance account. (see page 35)

In place of our old net worth account we have created eight new accounts. The process of subdividing the net worth account might be continued indefinitely. The Standard Accounting System provides for about thirty such income and expense accounts.

Into these eight accounts have been entered all the items that were contained in the old net worth account. It is evident that if we summarized all the balances of these eight accounts we would arrive at the same figure shown in the old net worth account. At the end of the year an account called P & L Account is created for the purpose of summarizing the accounts and arriving at the net income figure for the year. The balance in each of these accounts is

DR.		RENT EXPENSE						CR.	
Jan.	16	Jan. Rent.....	J16	35					
DR.		LIGHT, HEAT AND POWER EXPENSE						CR.	
Jan.	4	P. G. & E. Bill.....	J 4	10					
DR.		POSTAGE EXPENSE						CR.	
Jan.	9	Stamps.....	J 9	1					
"	13	".....	J13	2					
		Total.....		3					
DR.		ADVERTISING EXPENSE						CR.	
Jan.	7	Adv. in Chronicle.....	J 7	25					
"	12	Adv. in Examiner.....	J12	30					
		Total.....		55					
DR.		AUTO EXPENSE						CR.	
Jan.	8	Gasoline.....	J 8	6					
"	14	Repairs.....	J14	12					
"	15	Gas and Oil.....	J15	4					
		Total.....		22					
DR.		INVESTMENT BALANCE						CR.	
					Jan.	1	Bal. on this date.....	J 1	5,000

transferred to the P & L Account by a reversing entry. For instance, the Sales Billed Account would be closed into the P & L Account like this:

Closing the P & L Account into the Investment Account

The balance in the P & L Account may now in

DR.		SALES BILLED ACCOUNT						CR.	
Dec.	31	Closed to P. & L.....	J17	2,400	Jan.	2	Mdse. Sold.....	J 2	1,500
				2,400	"	5	Mdse. Sold.....	J 5	600
				2,400		10	Mdse. Sold.....	J10	300
									2,400
DR.		P. L. ACCOUNT						CR.	
					Dec.	31	Sales Billed.....	J17	2,400

Notice that this transfer was made by means of a double-entry—

Debit Sales Billed Account Credit P & L Account

After all the balances in the Income and Expense accounts have been transferred at the end of the year in this way to the P & L Account, the net worth group of accounts will appear as follows:

turn be closed into the Investment Account by means of a reversing entry debiting P & L Account 675 and crediting Investment Account 675. The new net worth balance is thus reduced once more to a single figure. Notice that the P & L account was subdivided when detailed information was wanted, and that when these accounts are combined, general totals are obtained. The account below is the

DR.		P. & L. ACCOUNT				CR.	
Dec. 31	Cost—Sales.....	1600	Dec. 31	Sales.....	2400		
"	Rent.....	35					
"	Light, H. & P.....	10					
"	Postage.....	33					
"	Advertising.....	55					
"	Auto Exp.....	22					
"	To Balance.....	675					
		2400			2400		
			Dec. 31	P. & L. Bal.....	675		
DR.		INVESTMENT ACCOUNT				CR.	
			Jan.	1	Opening Bal.....	J 1	5,000
			Dec.	31	P. & L. Bal.....	J24	675
					Total.....		5,675

Notice how closely the P & L Account resembles the Summary of Operations statement. This is in the form in which the contractor-dealer wishes to have information about his business presented to him.

Investment Account after the P & L account has been closed into it.

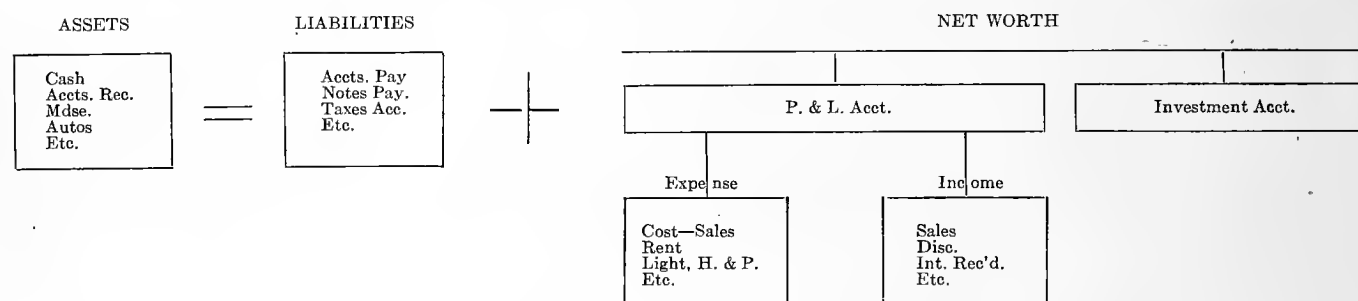
In practice, the income and the expense accounts are closed into the P & L account and finally into the investment account only at the end of the year.

This fact does not prevent us from listing the balances in the income and the expense accounts each month so as to obtain a Summary of Operations statement. This is what is actually done each month where the Standard Accounting System is in operation. Such a list of balances gives the same information that the P & L account would yield if the income and the expense accounts were closed into it.

Summary

Fix these essential principles in your mind. There are but three classes of accounts—Assets—Liabilities—Net Worth.

All Income and Expense accounts are nothing more than temporary divisions of the Net Worth



This course is conducted in connection with the Extension Division of the University of California, the complete text appearing in these pages. Students of the course may obtain supplementary material by application to:

Extension Division,
Room 301 California Hall,
University of California,
Berkeley, Cal.

account which are created for the purpose of classifying the data recorded in the books.

The fundamental equation always remains the same, although it may be ramified indefinitely. Here is how it now looks:

Rocky Mountain League Holds "Get-Acquainted Jazboree"

"When good fellows get together" used to have a different meaning from that which it has now, but that they still get together is shown by the attendance at the first "get-together" meeting of the Rocky Mountain Electrical Cooperative League. With such a successful start it is to be hoped that the electrical men in the Intermountain district will continue to hold these meetings, which lead to better understandings and a true spirit of cooperation.—The Editor.)

The Rocky Mountain Electrical Cooperative League entertained over two hundred members of the various branches of the electrical industry, at its "Get-Acquainted Jazboree" held at the Commercial Club at Salt Lake City on the evening of May 23rd. This is the first "get-together" and "get-acquainted" function held by the League since its organization last October. J. A. Kahn, president of the Capital Electric Company, and chairman of the advisory committee of the League, was master of ceremonies.

The first speaker was George R. Randall, manager of the Salt Lake Electric Supply Company. Mr. Randall outlined the objects of the league, explaining why it was organized, what it had accomplished so far, and what it hopes and expects to accomplish in the future. He told how the idea of a cooperative league originated in California, how arrangements were made to finance the proposition, and the remarkable results which have been obtained, in the way of educating the public and the members of the electrical industry along the lines of cooperation and mutual helpfulness. The results obtained by this cooperation have meant better service to the public, and more business—business on a better and larger basis—for the man in the electrical game. Mr. Randall pointed out how this much-desired situation could be brought about in this territory, through the Rocky Mountain Electrical Cooperative League.

The speaker pointed out the benefits involved in the functioning of the League for the central sta-

tion, the manufacturer, the jobber, and the contractor dealer.

"We must get together," he said, "to do the things we want to do in business. Only by cooperation can the electrical business be stimulated. Each one of us must do his part."

Mr. Randall's talk was followed by a vaudeville act from one of the local theatres, which made a decided hit.

H. T. Plumb, local engineer of the General Electric Company, who is also chairman of the convention committee of the local chapter of the A. I. E. E., announced briefly the plans for the entertainment of the convention delegates in Salt Lake in June, and urged that everyone in the electrical industry make it his particular duty to see that Salt Lake's A. I. E. E. convention guests were properly taken care of.

Wilson McCarthy, a prominent attorney of Salt Lake City, spoke on the subject of Cooperation, calling attention to the valuable lesson in cooperation which everyone had learned from the great war.

"All departments of the electrical industry should get together," he said. "Men are learning more and more every day that it is absolutely necessary for them to cooperate. People want some stability in business. They want some certainty as to the returns. The business man of today cannot stand alone. He must cooperate with his fellows. If business men engage in any kind of business war-

fare they are cutting their own throats—especially is this true in the electrical business.”

One of the features of the evening was an illustrated lecture on Utah's scenic wonders, by Dr. J. E.

SURE YOU'RE INVITED



—every last man of you in the industry. Come yourself and bring your crew.

Get-Acquainted Jazboree

FEED—VAUOEVILLE—SPEAKERS.

Main Dining Room Commercial Club.
Monday, May 23rd, 1921.
\$2.00 Worth of Fun for 50c.
Tickets on sale at all electrical stores, The Power Company, and at League Office.

Rocky Mountain Electrical Cooperative League.

812 KEARNS BLDG.

PHONE WASATCH 1351



Get-Acquainted Jazboree

(Name of guest)

ALIVE WIRE

Rocky Mountain Electrical
Cooperative League

Commercial Club
May 23, 1921

Admit One Live Wire

Rocky Mountain Electrical
Cooperative League

GET ACQUAINTED JAZBOREE

\$2.00 WORTH OF FUN FOR 50C

MAIN DINING ROOM COMMERCIAL CLUB MONDAY, MAY 23RD 8 P. M.

Form of invitation, admission card and name card used by the Rocky Mountain Electrical Cooperative League at their "Get-Acquainted Jazboree." That this unique method of stimulating interest in the affair was highly successful is shown by the fact that over two hundred attended this first "get-together" meeting.

Broaddus. Dr. Broaddus showed some beautiful pictures of Bryce Canyon, Zion Canyon and other noted scenic localities in Utah. His lecture was exceedingly interesting and instructive, and brought out the fact that Utah has scenic attractions which are unsurpassed anywhere in the world.

J. A. Kahn announced that the construction of the electrical home is now under way, and that it will be completed early in September. The league will have charge of the home for two weeks for exhibition purposes, during which time it will be open to the public for inspection. "This is going to be the most modern and adequately wired home in Utah," said Mr. Kahn, "and the illumination is going to be the most scientific. It is going to be to the interest of all of us to visit this home and to encourage people to go through it. Consider it your personal duty to talk about the "electrical home," and urge people to visit it."

At the conclusion of the program a buffet luncheon was served. This was the "get-together" and "get-acquainted" feature of the evening. Each guest displayed a card, giving his name, pinned on his coat lapel. With a spirit of good fellowship and cooperation, the boys certainly got together and got acquainted. The affair was such a success that the League has decided to have similar gatherings at frequent intervals in the future.

MANUFACTURES IN IDAHO, ALASKA AND HAWAII FOR 1919

Preliminary statistics have been issued by the Bureau of Census, Department of Commerce, of the general results of the census of manufactures for the state of Idaho and the territories of Alaska and Hawaii for 1919. These are compared with the census of 1914 for Idaho and with 1909 for Alaska and Hawaii. There is a marked increase in the value of products and the value added by manufacture. The increase in the totals indicate the growing industrial importance of the districts referred to. The value added by manufacture represents the difference between the cost of materials used and the value of the products manufactured from them; in 1919 this showed an increase of \$27,651,000 over 1914, or 203.9 per cent, for Idaho. For Alaska and Hawaii the value added by manufacture in 1919 shows an increase of 253 per cent and 138.6 per cent, respectively, over the figure of 1919.

SUMMARY FOR THE STATE OF IDAHO

	CENSUS		Per cent of increase
	1919	1914	1914 to 1919
Number of establishments.....	921	698	31.9
Persons engaged in manufacture.....	16,277	10,529	64.6
Proprietors and firm members.....	851	664	28.2
Salaried employees.....	1,494	946	57.9
Wage earners (average number).....	13,932	8,919	66.2
Primary horsepower.....	72,254	50,326	43.6
Capital.....	\$94,993,000	\$44,960,000	111.3
Services.....	21,228,000	8,731,000	143.1
Salaries.....	2,694,000	1,240,000	117.3
Wages.....	18,534,000	7,491,000	147.4
Materials.....	39,201,000	14,892,000	163.2
Value of products.....	80,414,000	28,454,000	182.6
Value added by manufacture (value of products less cost of materials).....	41,213,000	13,562,000	203.9

Summary of manufactures for 1919 and 1914 for the state of Idaho, as published by the Bureau of Census, Department of Commerce. Preliminary figures.

SUMMARY FOR THE TERRITORY OF ALASKA

	CENSUS		Per cent of increase,*
	1919	1909	1909 to 1919
Number of establishments.....	148	152	-2.6
Persons engaged in manufacture.....	7,318	3,479	110.3
Proprietors and firm members.....	57	135	-57.8
Salaried employees.....	686	245	180.0
Wage earners (average number).....	6,575	3,099	112.2
Primary horsepower.....	18,676	3,975	369.8
Capital.....	\$64,954,000	\$13,060,000	397.4
Services.....	10,896,000	2,328,000	368.0
Salaries.....	2,056,000	380,000	441.1
Wages.....	8,840,000	1,948,000	353.8
Materials.....	19,482,000	5,120,000	280.5
Value of products.....	41,495,000	11,340,000	265.9
Value added by manufacture (value of products less cost of materials).....	22,013,000	6,220,000	253.9

*A minus sign (—) denotes decrease.

Summary of manufactures for 1919 and 1909 for the territory of Alaska, as published by the Bureau of Census, Department of Commerce. Preliminary figures.

SUMMARY FOR THE TERRITORY OF HAWAII

	CENSUS		Per cent of increase,*
	1919	1909	1909 to 1919
Number of establishments.....	496	500	-0.8
Persons engaged in manufacture.....	11,744	7,572	55.1
Proprietors and firm members.....	700	1,074	-34.8
Salaried employees.....	1,075	594	81.0
Wage earners (average number).....	9,969	5,904	68.9
Primary horsepower.....	64,295	41,930	53.3
Capital.....	\$48,841,000	\$23,875,000	104.6
Services.....	8,666,000	2,795,000	210.1
Salaries.....	2,029,000	686,000	195.8
Wages.....	6,637,000	2,109,000	214.7
Materials.....	81,144,000	25,629,000	216.6
Value of products.....	133,096,000	47,404,000	180.8
Value added by manufacture (value of products less cost of materials).....	51,952,000	21,775,000	138.6

*A minus sign (—) denotes decrease.

*Includes 272 members of cooperative associations not reported in 1919.

Summary of manufactures for 1919 and 1909, for the territory of Hawaii, as published by the Bureau of Census, Department of Commerce. Preliminary figures.

SPARKS—Current Facts, Figures and Fancy

(The day of labor-saving devices is here. You can even fish now without baiting a hook, manipulating a net, or standing on an uncomfortable coral reef throwing spears. You can also have your vote counted by machinery, and some day you may be able to cast your ballot without so much as using one speck of gray matter. To those who think work is getting harder and harder, and life more and more commonplace, we recommend this page.—The Editor.)

Japan produces about 90,000 tons of ammonium sulphate per year by electrical processes.

* * *

There are 275,891 manufacturing plants in the United States, with a capital value of \$22,790,000,000, which use electric energy.

* * *

The greatest depth of ocean so far discovered is at a point about 40 miles north of the island of Mindanao, in the Philippine Islands. The water here is 32,088 feet deep.

* * *

In case Mr. Edison should catch any of our readers, we hasten to inform them apropos of nothing in particular, that the earth weighs eighty times as much as the moon and has about 1,700,000,000 human inhabitants.

* * *

The State of Oregon in 1920 cut 3,316 million feet of lumber, an increase of 96 per cent since 1915. Of this total 2,609 million feet were cut west of the Cascades and 707 million east of the Cascades. Oregon and Washington produced 25½ per cent of the total lumber cut in the United States in 1920.

* * *

Izaak Walton would turn in his grave if he could see an exhibition of the latest in angling, as practiced by the tourist at Catalina Island. An excursion boat equipped with six powerful floodlights scouts about Avalon Bay at night, scaring thousands of flying fish for the entertainment of the passengers. Many of the fish fling themselves against the lights and fall upon the deck.

* * *

The amount of salt produced in the United States during 1920 would provide every individual in the country with a pillar of salt about the weight of Lot's wife—130 pounds for each of 106,000,000 inhabitants, that is. Fortunately salt is used for a number of other purposes other than eating—for instance, packing meat, curing fish, refrigeration, enameling and so forth.

* * *

Wire netting does not sound especially suitable for road-building, but loose sand, smoothed and leveled and covered with chicken wire netting, firmly pegged down, made roads which gave good service to the British Army in Egypt and Palestine. These roads were very satisfactory for foot troops, and of some use for motor transport, but were rapidly rendered useless by animal drawn transport. Repairs

were easily made. As ruts developed the netting was raised and the rut wiped out.

* * *

The electrical home has recently been endorsed by a pair of swallows who are reported to have set up housekeeping in an arc light at a street corner. In addition to the excellent lighting and heating provided at night, the lady of the house finds an added convenience in the fact that she can leave her eggs for longer spells than is usual, electricity doing part-time duty as an incubator. Moreover the food problem is largely solved by the many moths and miscellaneous insects attracted by the light.

* * *

Counting votes by machinery is a necessary part of elections in the American Association of Engineers. The constitution of the Association requires that officials shall be inaugurated in office at the annual convention and the last vote is received only three days prior to the annual convention. As it would require a force of 20 men working three days in two shifts to count 25,000 votes, this work is accomplished by a letter ballot and a tabulating machine which is the standard type used for time-card work and has been adapted to this special work. As fast as the ballots are received they are taken out of the envelope by tellers, counted as to number and sent to the punching machine where a hole is punched in the ballot to indicate each man's choice. The ballot then passes through a verifying machine which does not punch any holes, but in case the punching is wrong an electric alarm is given.

* * *

Light without shadow is achieved by a device recently invented by a Frenchman for use in surgeries and other locations where shadows must be eliminated. A gasfilled high-efficiency incandescent lamp is placed in a cylindrical lens cell of the same general design as the lenses of the usual mariner's lights. This lens system serves to project the rays of light sideways, where they come into contact with 50 mirrors arranged as sectors around the inside of a large metal bowl reflector. These mirrors are tilted at such an angle as to throw the reflected beams of light downward, thus forming a concentrated circle of light. The area of this circle of light may be increased or decreased by varying the distance between the light source and the surface on which the rays are concentrated; and as the light is reflected from 50 mirrors, if the surgeon's hands or instruments cut off part of the rays, there are others that are not cut off, which supply the required illumination.

Builders of the West

IF a man be known by the occupations which fill his spare moments, then Duncan McDuffie who claims mountain climbing, city planning and gardening as hobbies, may be said to be interested in landscape in all its forms. And indeed, the work of his serious hours follows this same interest—for as one of the foremost real estate operators of the San Francisco bay region he stands out as a pioneer in the residential tract development which has done so much towards the beautifying of the home districts of our Western cities. If he were to select one achievement which should be longest associated with the memory of his name, his own choice would undoubtedly be the planting of thousands of trees to beautify the streets of Berkeley.

Like so many Californians, Duncan McDuffie was born in Iowa. He early exhausted the mountain-climbing possibilities of that state, however, and at the age of nine moved to Santa Barbara where he received the greater part of his schooling, gaining at the same time that interest in hills and gardens which is so closely associated with his later career. In 1899 he graduated from the University of California and entered the employ of Taft and Pennoyer in Oakland, as credit manager and head of the office. Six years later he was ready to enter business for himself and took advantage of the opportunity offered to purchase a partnership with J. G. Mason, already a real estate dealer of some prominence in the bay region.

One of the first activities of the newly formed Mason-McDuffie Company was the opening of a home tract in Berkeley known as Fairfield. Hopkins Terrace was the next development undertaken, and then followed in quick succession, Claremont, Claremont Court, and a little later Northbrae. All of this development was in the east bay section and the company now boasts a total of some 950 acres in Alameda county developments which represent 5,000 building sites, having an estimated value of approximately twelve and one-half million dollars.

In 1912 the company figured that, as the major sales were made to San Franciscans, the same principle of a restricted tract could be worked out in their community. It was necessary to have a tract of ground large enough to preserve its distinctive character in the midst of crowded city conditions, at the same time attractive in its surroundings and accessible. Thus was born St. Francis Wood. The city



DUNCAN McDUFFIE

whose progressive ideas and cooperative spirit have placed him in the forefront of real estate activities in the West, and have done much to forward the great "Electrical Home" movement in California.

was considering the possibility of a tunnel through Twin Peaks at that time and undoubtedly to the courage and efforts of those who laid out this and associated residence tracts in the district west of the Peaks may be given much of the credit for the actual carrying through of the tunnel.

During the war Mr. McDuffie served on Hoover's staff with the Food Administration as a "dollar a year" man," where his first duty was to provide shelter for the war workers. Over the protests of the eastern builders, he applied California building methods to the situation, completing the frame and stucco buildings within sixty-five days and, what is more, within the appropriation. In spite of predictions to the contrary the houses proved so satisfactory in all respects that they served as prototypes for the entire district of similar buildings that followed. Later Mr. McDuffie had charge of the commercial baking department, supervising the formulæ under which the 33,000 commercial bakers of the United States worked.

He was the first to realize the possibilities in the

Electrical Home idea, and it was with the cooperation of the Mason-McDuffie Company that the California Electrical Co-operative Campaign opened the first "electrical home." The ease of electrical operation makes possible homes even in this day of city apartment houses and servantless flats, and this company now plans to establish an electrical bungalow in its home tract as a permanent exhibit, to show the ease of keeping a home when it is electrically operated.

Through all his work has run his underlying interest in city planning. Cities, as they have grown up in America, have been entirely haphazard in their growth. Mr. McDuffie's idea is that the entire community has an underlying right in all the land within its boundaries and an interest in all development. His theorizing along this line has led him into concrete service along many lines—among them a several year term as president of the City Planning Commission of Berkeley, an organization which has done much to establish the zoning principle as a workable plan in city building.

To Duncan McDuffie, then, for his pioneer work along many lines, for his contribution to the homes and cities of the West through his constructive conception of the role possible to the builder in real estate, this issue of Journal of Electricity and Western Industry is affectionately dedicated.

PERSONALS

A. B. West, vice-president and general manager of the Southern Sierras Power Company, was elected president



of the Pacific Coast Geographic Division of the National Electric Light Association for the ensuing year at the annual convention of the division held at Del Monte. Mr. West is an executive in the company that has pioneered in the extension of electric power lines into entirely undeveloped country, with the result that the waste places have become flourishing agricultural districts supporting large towns

and cities and building up for the company a large industrial load. The company has also demonstrated the value of electric power in isolated mining districts; it has the longest high tension transmission line in operation in the world today. Without electric power to serve its needs it is impossible to conceive that southeastern California and the Imperial Valley would be the important section of the state that it is. Mr. West, through his connection with the company has brought about this wonderful development, has demonstrated that vision which typifies the West; under his leadership it is certain that the activities of the Pacific Coast Division of the N. E. L. A. will reflect the vision and become an even greater factor in bringing about the electrical development of the states bordering the Pacific.

W. N. Chisholm, marine engineer, has returned from an extended business trip to Africa.

D. H. Braymer, managing editor of *Electrical World*, is a business visitor in San Francisco.

Louis Carruth, vice-president of the Canfield Oil Company of Cleveland, Ohio, is a Pacific Coast visitor.

Chester H. Rowell, of the California State Railroad Commission, has left upon an extended vacation trip to the Orient.

E. W. Rice, president of the General Electric Company with headquarters at Schenectady, New York, is a recent San Francisco visitor.

Charles F. Stern, California state superintendent of banks, has resigned to accept a position with the First National Bank of Los Angeles.

Dr. W. F. Howard, of Pocatello, Idaho, was unanimously chosen president of the Idaho State reclamation association by its board of directors.

M. J. Brooks has recently opened an office in the Balboa Building, San Francisco, where he will be available in a consulting capacity as an expert on industrial surveys, electrical testing and efficiency engineering.

R. W. Murphy, Pacific Coast manager of the Westinghouse Lamp Company, is on a business trip to New York headquarters. Mr. Murphy will be gone about three weeks, returning to San Francisco about the middle of July.

W. A. Hillebrand, of the Ohio Brass Company, who has been in Japan for some time investigating the railway electrification problem gave an address before the Tokyo section of the Japanese Institute of Electrical Engineers on the subject of, "Insulators for High Tension Transmission."

Gus Lachman, representing the Mission Street Merchants' Association, of San Francisco, will spend six weeks in the East studying market methods.

Durbin Van Law, engineer in charge of the construction of the municipal power plant at Hugo, Colorado, has been retained to assist in the reconstruction work at Pueblo.

William Mulholland, chief engineer of the Department of Public Works for the City of Los Angeles, is in Washington, D. C., for a conference with the Secretary of the Interior in connection with the Colorado River power development.

B. A. Wagner, formerly manager for the Allied Industries, Inc., of San Francisco, has opened offices at 56 Natoma Street, San Francisco, under the name of the Electric Agencies Company, as representative of various Eastern manufacturers.

S. B. Merry, treasurer of the Republic Steel Package Company, is at Richmond, California, attending to the details of the construction of a branch factory where steel barrels and other types of steel containers will be manufactured. Mr. Merry will remain as manager of the completed factory.

W. C. Capron, chief engineer of the Andes Copper Company, is spending a month's vacation in California. The Andes Copper Company, a subsidiary of the Anaconda Copper Company, is one of the largest copper properties in South America and some unusual metallurgical methods are being worked out for the treatment of the ore.

C. H. Fosgaard, manager of the northern Colorado district of the Western Light & Power Company, has been transferred to Boulder, Colorado. In addition to the duties as manager of the Northern district Mr. Fosgaard will become manager of all the Colorado properties of the Western Light and Power Company. John Keegan, formerly manager of the southern Colorado district of the same company has been transferred to Cheyenne, Wyoming, and will become manager of the company's Wyoming properties.

Leroy C. Williams, for the past two years with the Westinghouse Electric & Manufacturing Company as a specialist in porcelain insulation, and sales engineer for high voltage transmission line materials, has entered the employ of the Alberhill Coal and Clay Company of Los Angeles, as engineer to direct ceramic and electrical research on high voltage insulators, and to make a thorough investigation of the local materials which might enter into the construction of electrical porcelain.

Paul P. Ashworth, distribution engineer for the Utah Power & Light Company, and recently elected chairman of the Utah section of the A. I. E. E., has been doing special work in connection with the annual convention of the A. I. E. E. which met in Salt Lake City June 21-24, 1921, as secretary of the convention committee in charge of arrangements. Mr. Ashworth first became associated with the electrical industry in 1907, when he entered the employ of the Telluride Power Company in Colorado; he was also connected with the subsidiary



properties of that company, the Wyoming Electric Company at Caspar, Wyoming, and the Bear River Power Company in Idaho. When the Telluride Power Company was consolidated with other properties into the Utah Power & Light Company Mr. Ashworth became associated with the latter organization. Mr. Ashworth is a graduate of Cornell University.

I. H. Christian, president of the Fresno Tire and Rubber Company, is a business visitor in San Francisco.

S. A. Jones, president of the San Diego Light & Power Company, was a recent visitor in San Francisco.

L. M. Cargo, district manager, Denver office of the Westinghouse Electric & Manufacturing Company, was a business visitor in San Francisco after having attended the recent Pacific Coast Division, N. E. L. A. convention at Del Monte.

Jonathan S. Dodge, chairman of the Board of Supervisors of Los Angeles, has been appointed state bank superintendent for California succeeding Charles F. Stern. Mr. Dodge was formerly a banker and is now president of the State Supervisors' Association.

H. T. Cory, who was one of the three engineers on the international commission that has reported upon the irrigation project of the Egyptian and Sudan governments and the proposed construction of a series of water storage reservoirs, has returned to San Francisco.

Lindon W. Bates, who is internationally known in his capacity of consulting engineer for railroads and port commissions throughout the world, and more recently through his connection with the development of colloidal fuel, has been retained to study the problem of fuel supply for the Southern Pacific Company.

Colonel Cesares Scarelli, C. E., head of the railway transportation service of the Italian army; **Guido Semenza**, consulting engineer and past president of the *Associone Electrotecnica Italiana*; **Professor G. G. Poti**, managing director of the Piedmont Hydroelectric Company and the North Italy Electric Company; **Marquis Cusani** and **E. Boschetti** are the members of an Italian commission that is in the United States studying railway electrification and hydroelectric development. The commissioners were recent visitors in San Francisco.

Carl E. Johnson, who was made vice-president and secretary of the U. E. Electrical Manufacturing Company of Los Angeles at the time of its recent reorganization, has been in the electrical manufacturing business practically all his life. Upon graduation from public school he entered the employ of a small manufacturing company which produced direct current generators. This was in the days when metal brushes were used on direct current machinery. Later he was employed by the Western Electric Company and the

Cutler-Hammer Manufacturing Company in various capacities. Mr. Johnson was born in Chicago but early removed to San Francisco and entered the employment of the Union Iron Works in the winding department, where he remained a couple of years. In 1906 he organized the Dynamo Electric Company of Los Angeles and engaged in the manufacture of electric motors. In 1908 the U. S. Electrical Manufacturing Company was organized and took over the Dynamo Electric Machine Company. Mr. Johnson served in the capacity of general manager of the U. S. Electrical Manufacturing Company until the latter part of 1920 when Mr. H. G. Steele, formerly of the Pittsburgh Trans former Company, became associated with the U. S. Electrical Manufacturing Company, at which time Mr. Johnson became vice-president and secretary of the company. Mr. Johnson has taken a leading part in the affairs of the local technical societies where his counsel has always proven of the greatest usefulness.



H. G. Butler, power administrator under the California State Railroad Commission, has resigned, effective July first,

to engage in private practice as a consulting engineer. Mr. Butler is a graduate of the engineering department of the University of Illinois and was engaged in railroad and street railroad construction work when he was secured as first assistant engineer for the Railroad Commission eight years ago. In June, 1918, he was made power administrator. During the period of the war and throughout the power short-



age of the past two years Mr. Butler performed a distinct public service by bringing about the cooperation of the various power companies and, through the application of a program of conservation, redistribution and curtailment of the power supplied to some of the less essential industries, prevented serious inconvenience to the public. Mr. Butler was given extraordinary powers by the Railroad Commission, and it is a remarkable tribute that he exercised these powers in such a manner that there were no complaints as to the justice of the orders, either by the power companies or the consumers of electricity during the period the restrictions were enforced. Mr. Butler enters into his new activities with the best wishes of his many friends throughout California and the West.

David P. Mason, formerly professor of forestry at the University of California, announces the opening of an office as forest engineer at Portland, Ore. Mr. Mason is one of our best known authorities on timber valuation and his writings are familiar to the readers of *Journal of Electricity and Western Industry*, as he has had a number of excellent articles appear in its columns.

OBITUARY

Albert O. Braun, assistant Western district manager of the Apex Electrical Distributing Company and formerly sales manager of the West End Electric Company of Los Angeles, was the victim of a fatal accident at San Francisco, June 19, 1921. Mr. Braun is survived by a widow and two children. His loss will be keenly felt by those with whom he was associated, as well as his family and friends.

William Chappell, president of the Rainier Heat & Power Company of Seattle, died in Baltimore recently, where he had gone for special treatment. Mr. Chappell came to Seattle in 1899, following successful operations in the Klondike district.

Henry Robert Williams, vice-president of the Milwaukee and Company, former president of the Chicago, Milwaukee & Puget Sound Railway Company, died in Seattle recently from heart trouble, following a year's illness. He was 71 years of age. In point of service, Mr. Williams was one of the oldest active figures in the American Railway industry. He entered the employ of the Chicago, Milwaukee company in 1867 and had been continuously identified with its operation since that time. His experience covered almost every branch of railroading, from telegraph operator to the highest executive duties. It was under his personal direction that the line connecting the main system of the Chicago, Milwaukee with Seattle was built. Mr. Williams was born in Palmyra, Jefferson county, Wisconsin, July 14, 1849. He had lived in Seattle since 1905.

Business Activities in Western Market Centers

SAN FRANCISCO

It is becoming more and more evident that the merchant who is trying to sell goods is selling goods, and that those who are complaining that there is no business are those who are wasting their energy in uselessly finding fault with conditions. There is nothing vitally wrong with business conditions either in San Francisco or other Western cities, or in the rest of the country. The purchaser is demanding service, as he rightly should; those that are giving service are getting trade. The greatest service each can give today is to be busy and cheerful, to show confidence in the future and to get down to work. In other words, to think and act normally.

With enthusiasm that is greatly to be commended, San Francisco is talking of improved means of transportation to take care of the growth of industrial activity that is sure to come. Two of the best engineers of the United States are coming to the city to study the proposition of building a bridge across, or a tunnel under the bay, so that there may be adequate facilities for communication between this city and the industrial and residential East-bay cities. Also there is a movement on foot to provide better highway facilities and inter-urban service with the peninsular district south of the city. The removing of Rincon Hill with the object of creating an industrial section close in to the financial and business district of the city is receiving active encouragement. This is striking evidence that the thinking men of the community are on the right track.

There has been some resumption of building under the American plan and it seems quite probable that the effort to establish open-shop conditions in the building trade will be successful. Public sentiment is with the employers in the present controversy. Regular sailings are being maintained along the water front and ocean freight is being moved with regularity. Retail and wholesale trade is slow, collections are only fair. Crop conditions are good. Unemployment, outside those out on strikes, has decreased during the past few weeks; there is, however, a surplus of labor.

Those who are familiar with conditions are far from pessimistic. The spirit of depression that is so much in evidence is in reality a mental state of gloom. When this is fully realized and we begin to talk, think and act cheerfully there will be material resumption of business activity.

LOS ANGELES

Nothing has happened in the last few weeks to change conditions in Los Angeles and it does not appear at this time that they will be changed for some time to come. Business is active in all staple lines. An analysis of six local department stores, just made public, shows that they have done an increased business over the corresponding period

of last year. New building, which has been the mainstay of business for some time, continues to go ahead with each month breaking the previous month's record. In May, Los Angeles held third place for building permits in the United States, being exceeded only by New York and Chicago. At the present rate it is safe to predict that figures on building for the current year will total \$80,000,000. This amount of money in circulation and the employment of labor that it represents will serve as a powerful balance wheel against any adverse condition that may develop.

Credits and collections are reported as satisfactory. There was an immediate response to the recent reduction in price of automobiles, indicating an immense reserve buying power. Securities of merit are readily absorbed and the continued buying of homes proves that money is available for conservative purposes. However, it is very evident that reckless spending for luxuries is at an end. A straw in this direction is the statement by a dry goods man that men are buying more piece goods and fewer ready-made garments. In the electrical field, business seems to be highly satisfactory.

SPOKANE

Greater confidence prevails in business circles due to optimism, rather than based on particular improvement in business. Every prospect is that there will be a bumper yield of wheat this fall and other crops are likewise in excellent condition. With very favorable reports coming from every section of the Inland Empire as to the condition of various crops, an excellent feeling has been created. Despite the fact that business is slow and money scarce, nobody wears a long face but all seem to be looking forward with confidence.

The lumber market is still stagnant. Demand for lumber is light and irregular and prices are weak. Improvement is not looked for in several months, if indeed until next spring. Many bankers are now extending the period of time in which they look for a return to more normal and better times, to the spring of 1922.

The lead mines of the Coeur d'Alenes remain shut down with the exception of a few of the larger properties where it would be nearly as costly to shut down as to operate; in addition a shut down would disintegrate and demoralize the working force.

According to a report of the Federal Reserve Bank of the Twelfth District, three of the leading department stores of the city report a decrease of 17.9% in their May business this year over that of last year. The May business increased 8.6% over that of April this year and the total decrease of business from January 1 to May 31, 1921, as against that of the same period in 1920, was only 5.4%.

The price movement is still slowly downward. Practically all the building

crafts have accepted or declared wage reductions of \$1 per day, approximating from 10% to 20%, according to the craft.

There is considerable activity in the building of very modest homes. Numbers of people in the farther removed sections of the city are building garages with the expectation of building later at lower prices. Real estate is inactive. Building owners in the last month have made substantial reduction in the prices asked for their property. A brisk demand and strengthened prices are predicted by real estate men for the fall.

PORTLAND

While there has been no material gain in the volume of retail or wholesale business, there has been an increase in confidence in the future and a disposition to wait patiently the improvement which it is believed will not be long delayed.

A reduction in the number of unemployed, increased building operations, road work, good crop prospects and lower freight rates on certain commodities, are helpful factors in the situation.

Some improvement in the lumber situation is noted, but the marine workers strike is still keeping water shipments far below normal, and preventing a quickening in the industry which would probably otherwise result. Lumber production is about 32 per cent below normal in the Northwest.

Electrical jobbers report some improvement in business conditions. There is considerable activity in electrical appliances and in line material. No material change has been noted in the credit situation although jobbers feel quite sanguine and predict better collections in from 60 to 90 days.

SALT LAKE CITY

Business conditions in Salt Lake City and the Intermountain section in general show an improved tone, and local bankers report a more optimistic outlook exists in financial circles.

There was a marked increase in building activity in Salt Lake during the month of May, as compared with the same month last year, the value of new construction and repairs and alterations authorized during the month being \$409,220 as against \$208,700 for May, 1920. The total permits were 197 compared with 82 for May last year. A still further increase is expected, for the reason that considerable construction work is now being planned. Most of the permits are for the building of homes.

Retail merchants are doing a fair business, although it is not up to normal by any means. The hardware and lumber trade report business improving on account of increased building activity. Electrical dealers are going along about as usual, with improvement in

business anticipated when building operations get well under way. The electric cooking school which was held during the week of June 13th to 18th inclusive stimulated considerable interest in the use of electricity in the home, and a number of ranges and other appliances were sold as a result of the demonstrations held.

In the mining districts, the silver-lead operators are working on a fairly satisfactory scale. Bullion freight rates from Utah Smelting points to the Atlantic seaboard have been reduced from \$22.00 to \$16.50 a ton by western trunk lines, and this reduction together with the reduction in the price of powder,

and the expected reduction in smelting charges, will be of great benefit to the silver-lead mining industry. The recent advance in the price of lead has also stimulated production of ore from the silver-lead mines.

The copper situation is practically unchanged, as far as resumption of mining activity is concerned, although there has been quite a noticeable increase in the consumption of the red metal throughout the country, which, of course, is a very favorable condition.

In the agricultural section crop conditions are excellent, and the farmers, while they are at present short of money, are not discouraged, and are

expecting a very good year. Some wool is moving, showing that sheep men are beginning to get rid of their clips, which is characterized as a wise move.

There has been a noticeable increase in bank deposits, as compared with the slump that has existed for some time past. The demand for money, however, still exceeds the supply.

The unemployment situation has improved somewhat. Men are obtaining work on the farms, and the increased building activity has also furnished employment to quite a number of men.

Collections, while not considered good, have improved somewhat during the past two weeks.

HAPPENINGS IN INDUSTRY

CO-OPERATION BY ELECTRICAL INDUSTRIES AID IN PUEBLO DISASTER

Recalled from the Chicago convention of the N. E. L. A. by the flood situation in Colorado, E. A. Phinney of the Jefferson County Light and Power Company of Golden, Colorado, president of the Rocky Mountain Division of the N. E. L. A., undertook the organization of the resources of the electric light and power companies of the Division for relief of the companies that suffered damage by the flood. The purpose of the movement was to render service to the public dependent upon the electrical utilities. Manufacturers, jobbers and contractor-dealers joined in the movement and gave every possible assistance to the light and power companies. Supplies, repair parts, repair crews and surplus energy were tendered to these companies. The surplus energy was transmitted through temporary physical connections. The conditions in Pueblo are described in the report sent by President Phinney to New York headquarters of the N. E. L. A. under date of June 9:

L. M. Cargo, district manager of the Westinghouse Electric & Manufacturing Company, has just returned from Pueblo, Colorado, and makes the following report to me as president of the Rocky Mountain Division of the N. E. L. A.:

Pueblo plant of the Arkansas Valley Railway, Light and Power Company completely submerged in water and mud. The switchboard on the mezzanine floor, which is six feet above the street level, is submerged nearly five feet. The plant operated until 9:15 Friday evening, June 3, when water and debris closed it. Five thousand gallons of transformer oil flooded the floors of the plant and was ignited by lightning. Strangely, the subsequent explosion of the oil put out this blaze, and this phenomenon undoubtedly saved the plant from destruction.

The Colorado Fuel and Iron Company is furnishing three hundred kilowatts of energy from its plant for street lights and for government and hospital service buildings. The local company is building a line from Canon City, and when completed within the next two days this will supply fifteen hundred kilowatts of energy for general use.

Financial damage to the city is not nearly so great as at first reported. No estimate is placed on this. The reestablishment of service by the Pueblo plant of the power company is simply a question of delay in washing, cleaning, and drying out of the equipment.

Sanitary conditions are horrible beyond description and growing worse. At one point nine carloads of cattle were drowned. Health officials are shipping in enormous quantities of oil for the purpose of burning decayed animal and vegetable matter.

Robert G. Hunt, assistant to vice-president Huey, and Chief Engineer H. Greenacher of the H. M. Byllesby & Company organization are here on the ground supervising the rehabilitation of the plant.

The Colorado Fuel and Iron Company manufacturing plant has been closed to release labor for the assistance of the light and power plant of the city.

Electric light and power companies in all parts of the district and from many sections of the country have offered assistance, but at present we have all the help needed. All such companies in this division stand ready to send engineers, foreman and experienced labor upon request. The Rocky Mountain Division is well organized to handle relief.

James F. Chapman, Chief Engineer of the Colorado Fuel and Iron Company deserves particular mention for the part he played in meeting emergency and for cooperation given. L. M. Cargo and A. F. McCallum of the Westinghouse Service Department, and A. L. Jones, L. S. Ickis and B. C. J. Wheatlake, engineers of the General Electric Company, are on the job rendering invaluable assistance.

EMPLOYEES OF PACIFIC SERVICE HOLD MAMMOTH ANNUAL DINNER

Something like two thousand members of the Pacific Service Employees' Association held their annual banquet at the Civic Auditorium in Oakland on the evening of Saturday, June 18th. A. U. Brandt ably presented the message of the Employees' Association to a notable number of invited guests and officials of the Pacific Gas & Electric Company. W. E. Creed, president of the Pacific Gas & Electric Company, responded in earnest manner expressing the desire that everything possible be done to forward the interest of each individual worker in the Pacific Service. This was followed by John A. Britton, who was introduced as the oldest living employe of the company. M. H. Aylesworth, executive manager of the National Electric Light Association, then gave the address of the evening, in which he brought home the idea that every individual citizen is directly interested in the bettering of the service, and in this part he showed that Pacific Service employes are playing master hands in present day development. James H. McGraw, president of McGraw-Hill Company, Inc., of New York, was introduced as the veteran publisher of the great business papers of the nation, among them being *Electrical World*, *Electrical Merchandising*, and *Journal of Electricity and Western Industry*. The enthusiasm and dash of the meeting will long linger in the minds of those who attended.

THE CALIFORNIA AGRICULTURAL AND INDUSTRIAL DEVELOPMENT ASSOCIATION

At the regular weekly luncheon held Thursday, June 16, 1921, the Associated Industries Association and the California Development Board unanimously adopted the constitution and by-laws forming a corporation to be known as "The California Agricultural and Industrial Development Association." The new association will have the following objects, as expressed in the constitution:

First: To furnish leadership and information in the development of agriculture in the state; consider its main problems; survey its status and progress, and furnish a channel for publicity of general nature.

Second: To furnish leadership in the development of manufacturing industries; encourage establishment of machinery in industrial centers for handling of industrial problems; collection of data to be assembled as a whole in the central bureau; furnish a channel of publicity for local objects.

Third: To secure cooperation of activities as represented throughout the state by relating the organizations throughout

the state, to this organization in order that efficient and co-operative force may be provided for the coordination and consideration of the agricultural, industrial and commercial activities, not of any one section but of the state as a whole; thereby furnishing a valuable medium for united expression. The objective: Make local bodies efficient and cooperative.

Fourth: To maintain exhibits of California products.

ELECTRIC COOKING SCHOOL AT SALT LAKE CITY

The Deseret News and the Rocky Mountain Electrical Cooperative League have conducted a most successful electrical cooking school in the Richards Street Auditorium, Salt Lake City. The object of the school was to give publicity to the advantages that result from the use of electricity in the home, and although emphasis was placed upon the electric range as a means of cooking, other electrical appliances for



Booth of the Rocky Mountain Electrical Cooperative League at the Richards Auditorium. The use of the convenience outlet was emphasized and electrical appliances demonstrated.

the household were displayed. The News gave a series of prizes, consisting of household appliances, for a baking contest, and there were a series of lectures on domestic economy emphasizing the results obtained by the use of electricity in the home.

The Rocky Mountain Electrical Cooperative League and the Deseret News have advanced the electrical home idea in a very specific and helpful way, and performed a distinct service to the electrical industry in all its branches.

BUILDING PERMITS IN WESTERN CITIES

City	January	February	March	April	May	Total
Seattle	683,840	578,925	923,180	1,439,855	1,566,005	5,191,805
Portland	646,560	1,334,220	1,527,805	1,940,305	1,454,320	6,903,210
Sacramento	148,712	288,180	320,100	336,015	560,690	1,653,697
Berkeley	138,533	168,514	339,333	325,569	284,621	1,256,570
Oakland	546,239	966,203	1,314,457	1,321,246	1,033,323	5,181,463
San Francisco	1,246,808	3,126,581	2,941,401	1,913,592	1,097,151	10,325,533
Fresno	341,550	189,650	393,445	356,990	312,435	1,594,070
Los Angeles	3,301,114	3,131,670	6,915,216	7,250,571	7,433,760	28,032,931
Long Beach	452,570	614,000	1,359,609	1,505,400	1,428,865	5,360,444
Phoenix	178,874	110,747	357,889	175,817	196,755	1,020,082
San Diego	499,342	909,775	1,241,532	1,657,055	416,298	4,724,002
Denver	292,450	506,250	1,169,050	915,650	807,475	3,690,875
Total	8,477,192	11,924,716	18,803,017	19,138,065	16,591,698	74,934,687

NITROGEN LABORATORY TO BE TRANSFERRED

The Fixed Nitrogen Research Laboratory will be transferred on June 30 from the War Department to the Department of Agriculture. With the Laboratory the War Department will transfer the remainder of its appropriation for this type of research. The amount is approximately \$500,000.

The Laboratory will be an independent unit of the Department of Agriculture and will be under the direction of Dr. Richard C. Tolman, who has been conducting the Labor-

atory for the War Department. Dr. Tolman will report directly to the Secretary. He will have the assistance of an advisory committee to be made up of representatives of the agricultural bureaus having immediate interest in nitrogen matters.

INSIGNIA OF ELECTRICAL DEVELOPMENT ARMY



The Electric Club of Los Angeles has launched a stock-selling campaign. This has taken the form of a military organization with three battalions of six companies each. The officers have over-seas caps with insignia denoting their rank. The enlisted men wear the button shown in the illustration. The purchaser of stock is given a small button with the device of the California Electrical Cooperative Campaign, as shown in the center of the larger button. It is estimated that there are 30,000 recruits to whom it is

expected to sell stock. The campaign has started off with a rush and a bang which augurs well for its success.

EXPOSITION AT PORTLAND, OREGON

Another step has been taken by way of preparation for the International Exposition to be held in Portland, Oregon in 1925. The United States Senate has passed a bill authorizing the President to invite foreign countries to participate in the Exposition. The Exposition is intended to celebrate the completion of the transcontinental and Pacific highways, the centennial of the invention of the electro-magnet and to exemplify the development of hydroelectric energy.

CORRECTION

In the issue of May 15, 1921, on page 500 second column and second line from the bottom of the page read: "to lead the voltage by 30° under normal conditions."

Trade Notes

The A. B. C. Electric Shop Has Opened New Seattle Store.

The A. B. C. Electric Shop, Seattle, recently moved its place of business from 1531 Third Avenue to 619 Fourth Avenue. The firm was organized by Burton R. Stare of the Pacific Lamp & Supply Company and the latter-named firm will move its offices, now located at 325 Yesler Way, to the location at 619 Fourth Avenue, where the two firms will be housed under the same roof, but will maintain separate identities. The A. B. C. Shop was organized about a year ago, with Burton R. Stare President, and F. U. Bliss, Vice-President and General Manager.

C. Kirk Hillman to Have New Location.

C. Kirk Hillman, dealer in electrical supplies and equipment, now located at 552 First Avenue South, Seattle, has leased new quarters at 313 First Avenue South, and will remove to the new location as soon as the new quarters can be gotten ready for occupancy. The new store will be 30 x 110 ft., with basement of like dimensions.

Yarnall-Warring Company Appoint Western Representative.

The R. B. Guernsey Company, 175 Second St., San Francisco and 305 Crocker Street, Los Angeles, have been appointed western representative of the Yarnall-Warring Company of Philadelphia. The Yarnall-Warring Company handles high grade line and power plant apparatus.

Electrical Company for Murray, Utah —

A new electrical firm, to be known as the Brinton-Hinley Electric Co., has been organized and will be located at Murray, Utah. The new firm will take over the electrical supply business of the Progress Company. D. B. Brinton and Geo. A. Hinley are the members of the new company. Mr. Brinton through his wide association with the people of this locality and his twelve years of successful and close affiliation with the Progress Company, is well qualified for the new venture.

Mr. Hinley, formerly of Ogden, has been engaged in electrical work for a great many years. Prior to his connection with the Progress Company he was employed by the Utah Power & Light Company.

Besides electrical merchandising, the new firm will make a specialty of electrical contracting, wiring and repairs.

New Electric Store Opened at Salt Lake City —

A new electric store has been opened at 42 South Main street, Salt Lake City. The "Electric Servant" is the name of the new store. As the name would imply, the store plans to cater to the needs of the home by providing all the latest electrical appliances for the convenience of the home and lightening the drudgery of housework.

The theory of the management is to fulfill the same function in the home, with reference to the needs of the

housewife, as the office supply store, for instance, does for the requirements of an office—to supply business methods, through the use of electrical appliances, in housekeeping.

The interior of the store is arranged in a novel and unusual manner, counters being entirely eliminated from the fixtures, enabling customers to inspect the merchandise at close range and to point out what they want, without any obstruction.

Goods are displayed in three-faced wall-cases. These cases are equipped with swinging doors rather than sliding doors, which makes them more dust-proof. The three-sided arrangement also gives the customer a view of the interior of the cases from either end as well as the front. The cases open at the sides rather than at the front.

The new store is also equipped with the Archer method of interior lighting, the shades being dust-proof, there being no shadows and no reflection, and at the same time furnishing a light that is 87 per cent efficient.

Rutenber Electric Company Establishes Western Agency.

The Rutenber Electric Company, of Marion, Ind., announce the appointment of the Western Agencies Company as the Pacific Coast Representatives for their line of domestic heating appliances. The Western Agencies Company has offices in San Francisco, Los Angeles and Seattle.



California Electrical Co-operative Campaign

"A ROLLING STONE GATHERS NO MOSS"

—but start a tiny snowball down the hill and watch it grow. Someone started a snowball when they launched the California Electrical Cooperative Campaign on its way! Three and one-half years ago the Advisory Committee, selected to represent every branch of the electrical industry, held its first meeting, discussed the policies to be adhered to, and the plans for 1918.

The adopted slogan was "Better Service to the Public" and the Campaign was termed educational, that is, the plans were to carry on educational features which would teach the consumer of electrical energy how to derive the maximum benefit from that energy. The "Cooperation" part of the name signified the creation of an understanding and friendship between the great outside public and the electrical industry as a unit.

But there was a stumbling block. The electrical industry was not a unit. It was one big family, that is true, but the children were not quite grown up enough to have gotten over their squabbling. And so, before the Cooperative Campaign could educate the people to a realization of the fact that the electrical industry was one big unit, it had to educate the electrical industry itself to a realization of that very same fact.

Everyone is doing nicely now. The children are growing rapidly and are learning to take a pride in their family, its accomplishments, and its standing in the community; and the public realizes more and more "what a fine, healthy family the electrical industry is growing to be."

An internal education has become less necessary, added impetus has been given to the missionary work being done on the outside. Every possible opening for the infusion of the electrical idea is being taken advantage of—letters, leaflets, wiring plans, motion picture films, advertising slides, electrical homes and personal contact all being employed. The great wheel was hard to get revolving but at last the

architect and builder is after the electrical contractor for better wiring jobs, the electrical contractor is after Mr. and Mrs. Homeowner with his modern ideas, and Mr. and Mrs. Homeowner are after the architect and builder for electrical homes. Like the squirrel in the wheel—"They are off" and gaining speed constantly.

But the activities of the Campaign are not limited to the home. There is work to be done in offices, stores and industrial plants. Lighting, that vital factor in quantity and quality of production, and in labor welfare, is totally disregarded in a large percentage of plants and given very little consideration in the remaining establishments. There are very few factories, shops or plants which have adequate illumination for the work being done within them.

To remedy this condition industrial and commercial lighting exhibits have been installed in San Francisco and Los Angeles and a portable exhibit has been assembled for temporary erection in the smaller cities of the state. This exhibit demonstrates the contrast between correct and incorrect lighting and the lecture which accompanies the demonstration clearly conveys the message of the necessity for good illumination. It shows how to install an adequate system and how to determine just what the efficiency is of an installation already in.

Educational work is not an over-night process; it is a slow, steady accomplishment. It is not a tonic to be swallowed in one gulp, but a lotion to be applied externally and absorbed. There is no force of nature more definite in its goal, more certain of accomplishment than the glacier yet it never visibly moves. The occasional gust of wind gets the yacht nowhere, it is the long, steady breeze which brings her into port.

An educational campaign is that same indefinable "movement" which marks the glacier's progress. It is not a great gust of advertising but a steady breeze of "reason." Such is the work being done by the California Electrical Co-operative Campaign.

MEETINGS OF INTEREST TO WESTERN MEN

(With the advent of the vacation season the meetings of organizations tend to diminish, important business being reserved for the fall, when the complete personnel is in attendance. A number of interesting gatherings are reported, however, especially in the Northwest.—The Editor.)

Ogden Chapter A. A. E. Meeting.

The Ogden chapter of the American Association of Engineers held its regular monthly meeting on June 6th, at which E. E. Kidder, delegate to the national convention recently held at Buffalo, N. Y., and about sixty-five members of the Ogden organization were present. Mr. Kidder spoke in regard to the national convention, and stated that twenty-five thousand men are now members of the American Association of Engineers.

With regard to the national convention, Mr. Kidder said, in part:

"The association is the strongest in the middle west and east, though the west has some strong chapters. It is doing a work among engineers that has scarcely been touched by the older societies, in that it aims to place the engineer before the public as a professional man and to care for his social and economic welfare. It aims to have the engineer take an active part in public affairs, and not merely discuss and prepare papers on technical subjects.

"One of the most important reports at the national convention was that more than 3400 engineers had been placed during the last year by the employment commission at salaries from \$1200 to \$15,000 per year. This is a good showing, especially at the time of depression in this country.

"Among the things recommended at the convention are that engineers should not bid for jobs; that corporations should not be given licenses to practice engineering; that sanitary engineers should be on boards of health; that two weeks' notice by either party should be given in case of separation from employment; that the Phipps bill be passed favoring increased federal aid to western states in road building; that the association favored national financing of reclamation work; that a committee be formed to plan employment service and payment therefor; that a committee be provided to amplify the statement of ideals and objects of the association."

Tacoma Electrical Men Hold Meeting

The Tacoma Association of Electrical Contractors and Dealers met on June 13, for an informal banquet, and to discuss future activities or the organization. A campaign for \$25,000 is being staged over a two-year period, to cover field and educational activities of Northwest electrical men. David T. Dickson presided at the meeting, which was addressed by J. L. Muffly of the Y. M. C. A., who spoke on ideals in the electrical business; J. H. Kelly, speaking on industrial relations; H. L. Hagen on Advertising, and J. L. Fulgate on Organization.

Necessity for Hydroelectric Development Impressed Upon Retail Merchants' Credit Association

At a recent meeting of the Retail Merchants' Credit Association of Los Angeles, E. H. Tucker formerly assistant Federal Reserve agent of the Federal Reserve Bank of San Francisco brought out the fact that the period of world adjustment had dealt kindly with the retail credit men of California. In the face of shrinking inventories and more difficult collections as values decreased, the constant influx of people from other sections has maintained sales and permitted the retail merchant to adjust inventories and losses more easily than has been the case in the rest of the country. Pointing out the necessity for the development of hydroelectric power, he said:

"The stage is set for the industrial development which will free California from reliance upon income from capital invested in other sections of the country. The eyes of the world are turned toward the Pacific. The teeming millions of the Orient are calling for the products of America. Manufacturing conditions are ideal in this state. California is on the verge of a great industrial expansion.

"This development must come immediately. Otherwise markets now open to California will be usurped by others, and it will be the work of many long years to bring them back to California.

"One factor will primarily determine whether California will take advantage of its great opportunity. That is the immediate development of sufficient supplies of cheap power to turn the wheels of growing industry. This development can not wait upon vague demands for public ownership or upon the building up of great public organizations for the exploitation of the vast hydroelectric power resources of California.

"It must come through the power utility companies of this state, which already have the organization and are even now pushing their vast development program under the supervision of the California Railroad Commission, thereby assuring fair play for utility companies, investors in the obligations of those companies and consumers of the power which they produce.

"These utility companies can not solve this problem alone. It is the problem of every citizen of the State of California and requires both the financial and moral support of the entire community. With such support the power program can be carried forward. Retail credit will be placed upon a more scientific basis, and the problems of retail credit will be materially simplified through increasing turn-over at smaller margins of profit and assurance of stable income for purchasers, even in the declining markets."

American Association of Port Authorities to Meet in Seattle

Frank Waterhouse, head of the Frank Waterhouse organization in Seattle, one of the prominent shipping men of the Pacific Coast, recently accepted the chairmanship of the executive committee which will have charge of the arrangements for the American Association of Port Authorities Convention, to be held in Seattle, October 11-12-13-14, 1921. President W. T. Christensen of the Seattle Port Commission, was instrumental in bringing the convention to Seattle, states the Seattle Chamber of Commerce, and other commercial and civic organizations are working with the commission to make the convention the most successful ever held in North America. Seattle will entertain more than 1000 delegates from all parts of the world, representing port authorities, associations and organizations interested in port matters; transportation companies, manufacturers, importers, exporters and terminal engineers. Present indications point to a large representation from the Far East and countries of Europe.

Associated General Contractors Hold Meeting at Seattle

Members of the Pacific Northwest Chapter of the Associated General Contractors of America, mainly those in Seattle and Tacoma, were guests recently at a banquet given by the Seattle Master Builders' Association. The Banquet and "Get-Together" meeting was held in the Masonic Club Rooms. The meeting was presided over by H. C. Bromley, of the Hull Building Company, Seattle, who also acted as toastmaster.

Interstate Realty Association Plans Annual Convention

The annual convention of the Interstate Realty Association will be held in Rainier National Park, Mt. Rainier, on August 24, 25 and 26, and according to information received from the Tacoma Real Estate Association, who will act as hosts to the visiting delegates, an unusually large attendance is promised. The fact that all sessions will be held on the Mountain has been a big drawing attraction and many realtors have announced their intention of bringing their families to share in the trip to the National Park.

The reports of the Portland convention of the Northwest Electric Light and Power Association and the Salt Lake City convention of the A. I. E. E. have been omitted from this issue in order to make room for the large amount of material which had to be included to report properly the convention of the Pacific Coast Division, N. E. L. A. Accounts of these two conventions will appear in the July 15th issue.

LATEST IN APPLIANCES AND EQUIPMENT

(The growing field of radio telephony and telegraphy continues to encourage the development of new apparatus, an example of which is described below, together with a recently perfected multiphase renewable fuse. A new book, and an original booklet from the Southwest, are reviewed.
—The Editor.)

UNIVERSAL WIRELESS RECEIVER

A new universal radio telephone and telegraph receiver, regenerative through its entire range (which covers all wave lengths in common use), has been developed by The Colin B. Kennedy Com-



Front view of the Kennedy Type 10 Universal receiver for radio telegraphy or telephony. The unit is completely self-contained and can be used in all commercial wave lengths.

pany of San Francisco. The inductors, condensers, audion control accessories and auxiliary instruments necessary to a complete receiver are entirely self-contained within a walnut cabinet $12\frac{1}{2} \times 19\frac{1}{2} \times 8\frac{1}{2}$ inches overall. The only external connections necessary for the reception of signals are those to the aerial and ground, batteries and telephone receivers.

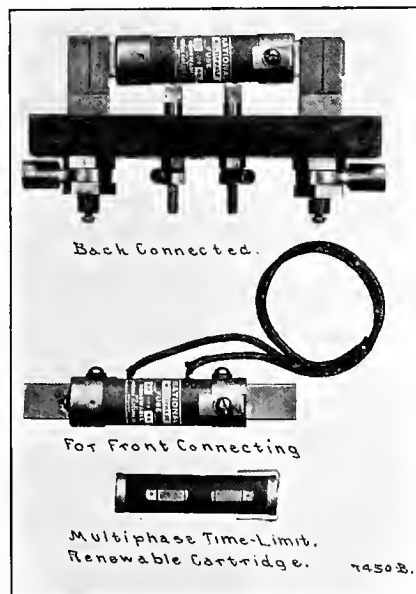
The control knobs and dials and indicating instruments are mounted on an engraved panel of bakelite or formica forming the face of the receiver. The interior is accessible through the hinged cover of the cabinet and all the parts are mounted on the back of the panel, so that the entire receiver may be removed as a unit from the cabinet.

Additional features are special bank-wound moisture-proof inductors wound upon formica tubing in units corresponding to the inductance steps used, sturdy balanced type primary and secondary variable condensers with soldered pigtail connections to the rotors, micrometer adjustment of secondary condenser, variable grid condenser with air dielectric, adjustable feed-back circuit, fine adjustment of plate voltage by means of potentiometer across filament battery, and an ammeter for indicating filament current. A modified form of the Armstrong regenerative circuit is employed. The complete receiver weighs 35 pounds.

MULTIPHASE RENEWABLE FUSE

There has been a demand on the part of large users of multiphase motors for some means of preventing this type of motor running single-phase. The difficulty of producing a satisfactory type of relay has led the Federal Electric Company to develop a multiphase renewable fuse which accomplishes this result. The blowing of one fuse on a multiphase circuit will not prevent a motor

from running single-phase nor will it cause a circuit breaker or overload release to operate. The new type of fuse has a low voltage auxiliary coil embodied in the renewable cartridge, and as the cartridge cannot go into the case in



National Multiphase Renewable Fuse; the front and back connected type of fuse is illustrated. The use of this fuse for multiphase motor installations prevents the operation of the motor single-phase.

but one position it easily makes the auxiliary connection with the case itself. Connection is made between each fuse, either by wires for front connection or auxiliary knife edges for back connection, and the auxiliary coil in another fuse. When one fuse blows the auxiliary element in another fuse also blows, thereby preventing the motor from running single-phase.

This is really a time-limit fuse and is absolutely fool-proof.

Books and Bulletins

Electrical Machinery

By F. A. Annett. 450 pp., 6 x 9; illustrated. Published by McGraw-Hill Book Company, New York City, and for sale by Technical Book Shop, San Francisco. Price, \$3.00.

The appearance of a new book on practical electricity raises the question as to what justification is there for a book on the elements of electricity when there are already many attempts of this kind? The answer is in the book's extreme simplicity and practicability.

It develops the theory in the simplest manner and then applies it to everyday practice. The author is associate editor of *Power*, in whose columns the contents originally appeared as a series of articles in a practical study course on the installation, operation and maintenance of electrical machinery. Starting with a simple explanation of the fundamental principles of magnetism and electricity in ideas of one syllable, he next defines and applies Ohm's Law, showing how resistance, current, voltage and power are figured and measured. All this occupies nine chapters, nearly one-third of the book, and is the basis for explaining the fundamental principles of dynamo electric machinery which follow. The next section is devoted specifically to the characteristics, construction and operation of direct current generators and motors, including descriptions and pictures of rheostats and three-wire systems. The last eight chapters, covering nearly one-quarter of the full number of pages, are devoted to alternating currents, giving the principles and methods of operation of motors, generators, meters and transformers, one, two and three-phase. The most remarkable feature of the book is that all these things are clearly explained so as to be understandable to a man whose knowledge of mathematics does not go beyond simple fractions. The slight knowledge of trigonometry necessary for an understanding of alternating currents is taught in the course of the discussion. The whole book is a good word picture aided by good photographs and drawings. The general make-up is almost as praiseworthy as the contents—large clear type and diagrams, and substantial binding in leather fabric make it a book for shop use as well as for home study, though the suggestion is pertinent that the future editions to which the book is destined be made with thin paper. It is preeminently the book to put in the hands of a young man in a shop or trade school as a first course or introduction to the study of electricity.

Marching Orders

The Electrical Development Army of the Great Southwest has received its "Marching Orders" in the form of an attractive booklet in which the purpose of the army is clearly and briefly outlined. The Electrical Development Army was organized by the Electric Club of Los Angeles. H. L. Harper is commander-in-chief, Percy H. Booth, colonel; L. Gans is major of the contractor-dealer battalion; F. J. Airey, major of the jobbers' battalion, and K. E. Van Koran, major of the manufacturers' battalion. In each battalion there are six companies under a captain. The army will further the development of the electrical industry in all its branches.

NEW ELECTRICAL and INDUSTRIAL DEVELOPMENTS

(Some serious fire losses in the Northwest are offset by news of important new construction under way. In the Pacific Central district numerous building permits and large industrial ventures indicate healthy activity, while the Southwest and Intermountain districts send reports of the steady progress of electrical enterprises such as hydroelectric development and new city lighting.—The Editor.)

THE PACIFIC NORTHWEST

WENATCHEE, WASH.—The Chelach County Commissioners have postponed until July 7 the question of granting a franchise to the Puget Sound Power & Light Company.

TACOMA, WASH.—The city council recently passed an ordinance providing for the installation of a system of street lights on J Street, from Division Avenue to Center Street, at an estimated cost of \$16,630.

TACOMA, WASH.—The municipal lighting department, Tacoma, is considering the proposition of extending lighting and transmission lines to serve districts of Brookdale, Spanaway and vicinity, outside of the Tacoma city limits.

VANCOUVER, B. C.—The contract for the complete electrical equipment for the new provincial court house at Prince Rupert has been let to Mundy, Rowland & Co., electrical engineers, Standard Bank Building. The contract approximates \$10,000.

CHEHALIS, WASH.—In the face of earnest solicitation of a large delegation of Chehalis business men urging that the proposed standard street lighting system be installed in the business district of the city, the city commission formally rejected the proposition.

SEATTLE, WASH.—The Hallidie Machinery Company, of Seattle, formerly located in the L. C. Smith Building, is now located at 300 First Avenue South. The new quarters permit of the company maintaining show rooms in connection with offices and sales rooms.

TACOMA, WASH.—The city council recently passed an ordinance authorizing the expenditure of \$39,000 in the purchase of poles, cross-arms, wire, insulators and other materials for the construction of a high tension line to serve the north and west sections of the city.

CHEWELAH, WASH.—The new plant of the National Sash & Door Company here, which has been under erection for the past eight months, began operations recently, employing 35 men. The plant will have a daily capacity of 35,000 feet. The company controls 40,000 ft. of pine.

CENTRALIA, WASH.—The plant of the Centralia Mill Works & Supply Company here was recently destroyed by fire, causing a loss estimated at \$40,000. About \$10,000 in insurance was carried. The plant was one of Centralia's most promising industries. Unofficially, it is understood the plant will be rebuilt.

TACOMA, WASH.—Commissioner of Light and Water has been receiving bids for the furnishing of all labor, tools, material, and installing a street lighting system in L. I. D. No. 5515. Work is to commence 60 days from the signing of contract, and to be completed within 150 days.

SEATTLE, WASH.—Application for a suitable site, on which it proposes to erect a \$500,000 factory, was made by the American Nitrogen Products Company to the Seattle Port Commission recently. The manufacturing concern, in its letter to the commission, stated that it desired a four or five-acre tract at or near Seattle.

SEATTLE, WASH.—The West Seattle plant of the Nettleton Lumber Company recently sustained a loss from fire unofficially estimated at between \$35,000 and \$50,000, completely covered by insurance. The plant employs between 200

and 225 men, a majority of whom will be employed in rebuilding the burned portions of the plant.

TACOMA, WASH.—W. P. Fuller & Company, operating in the largest cities on the Pacific Coast, plans the immediate construction in Tacoma of a five-story, 50 x 100 ft. reinforced concrete addition to its present Tacoma building. It is expected that the contract for erection will be let by July 1. J. S. Meneffee is manager of the Tacoma branch.

TACOMA, WASH.—Fire of undetermined origin recently destroyed the Tacoma plant of the Marine Products Company, manufacturers of fertilizer, causing damage estimated at more than \$40,000. J. H. Scott, president of the company, reports the loss was about half covered by insurance, and that the company will build a larger and better plant at once.

YAKIMA, WASH.—The Tieton Mutual Electric Company, a mutual, non-profit corporation with a capital stock of \$60,000, will be formed with headquarters in Yakima, to furnish electric power to Tieton, Naches Heights, and Cowiche residents. C. E. Udell, Yakima, has been selected advisory attorney and stock will be subscribed by residents of the communities to be served.

PORTLAND, ORE.—Contracts approximating \$250,000 for the construction of a dam, small power plant and screen house at the head works of the Bull Run water reserve will be let soon, according to Fred Randlett, chief engineer of the water bureau. A third pipe line is also contemplated by the water bureau, the cost of which, together with rights-of-way, etc., will be close to \$4,000,000.

PORTLAND, ORE.—The Western Wool Warehouse Company has received a license from the United States Department of Agriculture and will be ready to receive and store wool and operate its scouring plant in the near future. The company's warehouse and scouring plant is the largest of its kind in the Far West. Financially interested in the project are several representative wool-growers and bankers of Oregon, Washington, and western Idaho.

SEATTLE, WASH.—The Washington Machinery & Storage Company of Seattle, recently appointed Northwest distributor for J. D. Adams & Co., manufacturers of road making equipment, has purchased the equipment of the Tacoma Shipbuilding Company, of Tacoma, and is making preparations to dismantle the yard. Among the equipment purchased is listed electric hoists, steel rails, derricks, compressors and other valuable apparatus utilized in ship construction.

YAKIMA, WASH.—To care for its expanding business, the Duddy-Robinson Company here will increase its cold storage facilities in the Yakima Valley to 375 cars of fruit by adding another story of cold storage to its Yakima plant and the erection of a two-story plant at Buena. The new unit will be a building 90 x 250 feet, including packing rooms and loading porches, and will cost \$75,000. Each floor will have cold storage space of 90 x 200 ft., with a combined capacity of 150 cars of fruit.

TACOMA, WASH.—The United States Machine & Engineering Company, manufacturers of boilers, recently completed the first unit of its local plant and has begun manufacturing

boilers. At present 30 men are employed. The first unit of the plant is 186 x 62 ft., with an office and drafting room in addition. The plant is so constructed that railway cars can be run into the building and unloaded by an overhead electric crane. The company is working at the present time on the construction of the entire heating and boiler plant for the Buffelen Lumber Company, of Tacoma, and has twenty other contracts, either on the floor or ready for work.

SEATTLE, WASH.—Ralph Budd, of St. Paul, president of the Great Northern Railway Company, while in Seattle recently on a trip of inspection, announced that his company, in anticipation of a record-breaking apple crop in the Wenatchee and other fruit-growing districts tributary to its lines in Washington, has awarded a contract for 500 new refrigerator cars to cost \$1,500,000. The contract specifies, according to President Budd, that only Coast fir lumber shall be used in constructing the cars, and that the lumber shall be purchased from mills on the lines of the Great Northern. The cars will be built by the American General Tank Car Company of Chicago.

SPOKANE, WASH.—Applications have been received by the Federal Water Power Commission for two small power installations on tributaries of Phelps Creek in Chelan county, Wash. Each plant will consist of a low diversion dam and a short length of pressure pipe to a small power plant of about 100 horsepower, to be located at the mouth of the two mines. Applications are filed by the Royal Development Company, Wenatchee, of which James Naughton is president. A permit is about to be issued for construction of a dam, conduit and power house on the south fork of the Clearwater river, in Idaho, proposed by the Grangeville Electric Light and Power Company of Spokane.

THE PACIFIC CENTRAL DISTRICT

FRESNO, CAL.—Plans for a new fireproof automobile exhibit building to cost \$35,000 have been filed for the Fresno County Fair.

HAYWARD, CAL.—The first Luthy automobile battery to be manufactured in the West was produced here June second, in the new Luthy factory.

FRESNO, CAL.—The new Midway natural gas burning steam plant of the San Joaquin Light & Power Corporation at Buttonwillow, Kern county, has been put in operation recently. The first unit of 17,000 horsepower capacity is completed. Other units will be added as the load increases.

SACRAMENTO, CAL.—The Lawrence Warehouse Company, operating 19 warehouses in San Francisco, Oakland and Sacramento, has applied to the Railroad Commission for an order authorizing it to sell 5,000 shares of its preferred stock for \$47,500, and 5,000 shares of common stock for \$47,500.

SACRAMENTO, CAL.—H. L. McCready, engineering expert with the State Department of Engineering, left for El Dorado county to investigate the proposed Silver Creek project offered as a base for a hydroelectric project for Sacramento separately or in cooperation with other municipalities.

FRESNO, CAL.—The revival in construction work in Fresno is expected to follow a decision this week of the local Building Trades Council to accept a 7½ per cent reduction in wages, to take effect early in July.

SACRAMENTO, CAL.—Formation of the Nevada Irrigation District, one of the largest projects of its kind ever proposed in California, has been approved by the State Department of Engineering, following a several months' investigation as to the feasibility of the scheme from an engineering standpoint.

REDDING, CAL.—An epochal industrial event for Shasta county is the starting up of the Shasta Zinc and Copper Company's smelter at Winthrop, or Bully Hill. The great buildings stand on the site of the Bully Hill smelter that was shut down in 1909 because zinc in the ore made it impossible to smelt for copper, silver and gold.

SAN FRANCISCO, CAL.—Placing of an order for 10,000,000 pounds of copper wire by the Pacific Gas & Electric Company of San Francisco was announced recently. It was said to be the largest single order for copper wire ever made. The wire will be shipped here from Black Eagle, Mont., it was said, and will require 270 railroad cars for transit.

FRESNO, CAL.—San Joaquin Valley commercial secretaries have launched a movement for the making of a road to serve as a connecting link between Grant and Sequoia National Parks. Over 50,000 people visited the two parks last year. The new road would make a round trip possible between the two and would be one of the most scenically spectacular in the state.

FRESNO, CAL.—The California Associated Buyers' Company, with approximately 1,000 members in the San Joaquin Valley, has been formed, with headquarters at 149 Broadway, Fresno, to handle ranchers' purchases at cost and eliminate middlemen costs. G. F. Rowell, trustee of the organization, claims that it has booked \$60,000 worth of orders in eight weeks.

OAKLAND, CAL.—The Pacific Gas & Electric Company plans to construct a \$325,000 six-story building on the southwest corner of 17th and Clay streets. The building is to be of the steel-frame class A type and will be so constructed that two additional stories can be added to it should conditions warrant the improvement. The building will be devoted exclusively to the use of the company.

SAN FRANCISCO, CAL.—The Pacific Gas & Electric Company has given a contract to the Steel Tank & Pipe Company of West Berkeley for pipe for the hydroelectric plant on Pit river. The pipe is 10 feet 9 inches in diameter, seven-sixteenths of an inch thick and 1000 feet long. It will be used in conjunction with a welded steel pipe 9 feet and 9 inches in diameter and 1¼ inches thick, to carry water of the Pit river to the power house of the electric company.

OAKLAND, CAL.—The announcement of the purchase of the million-dollar plant of the Western Canning Company has been made. The canning plant was built and operated by wealthy Chinese and was devoted to exclusive packing of fruits. The plant is now operating under the management of the Virden Company, which concluded the deal for \$1,000,000, and hereafter it is to be operated throughout the year, packing meats after the fruit season is ended. Fifteen hundred hands will be employed regularly.

SAN FRANCISCO, CAL.—Building of American marine Diesel engines on a large scale will be begun here by the Bethlehem Shipbuilding Corporation at its San Francisco and Alameda plants, has been announced by J. J. Tynan, general manager and vice-president of the corporation here. He has just returned from New York, where he was in conference with Charles M. Schwab, president of the corporation. Tynan announced that Schwab will be in San Francisco about the middle of July to complete arrange-

ments for the manufacture of the oil-burning engines.

SACRAMENTO, CAL.—More permits for the erection of dwellings in Sacramento were issued during May than in any previous month in the history of Sacramento. This is shown by a report compiled by Deputy Building Inspector George Myrick. During May, permits for the construction of seventy-seven dwellings at a cost of \$245,425 were issued. Permits also were issued for construction of two apartment houses costing \$100,000. Cheaper building costs, principally the reduction in prices of building materials, are said to be responsible for the heavy activity in building of new residences.

FRESNO, CAL.—Fresno county, as shown by the U. S. Census figures just made public, leads all the counties in California in increase of farm values. The percentage for 1920 over 1919 is 241.3. Imperial is second on the list with 182.2, followed by Orange, 177.7, Madera, 155.9, and Tulare, 153. The value of Fresno county farms jumped from \$81,997,943 to \$279,851,191. Los Angeles county has the largest number of farms with 12,444. Fresno county is second with 8,317 farms, but leads in acreage with 1,319,531 acres as against Los Angeles, 882,333 acres. Fresno has an overwhelming lead in grapes, with 4½ times the crop of Tulare county, and peaches with a similar gain over Sutter county. Tulare is the only county above Fresno in hay crops, with 327,010 tons against Fresno's 291,823 tons. The hay showing demonstrates the remarkable growth of Fresno as a dairying county, despite the prominence given to its fruit and vine crops.

THE PACIFIC SOUTHWEST

PHOENIX, ARIZ.—State Water Commissioner Norviel has accepted for filing the application of the Southern California Edison Company to develop hydroelectric energy from the Colorado river.

PHOENIX, ARIZ.—Blyth, Witter & Company of California have bought an issue of \$500,000 first and refunding mortgage bonds to provide the necessary funds with which to extend the facilities of the Central Arizona Light & Power Co. of Phoenix, and to take care of the rapid growth of Phoenix and surrounding territory.

COLTON, CAL.—The Wilcox Oil Company plans the erection of a large oil storage plant in the block between F and G streets, west of Colton Avenue. Ten 1,000-gallon tanks and a warehouse will be constructed on the ground north of the Ventura plant. Cement bases will be provided for the tanks. When completed the plant will have 100,000-gallon capacity.

LONG BEACH, CAL.—In order not to lose outstanding orders amounting to approximately \$500,000, which must be filled at once, the Golden State Woolen Mills, Inc., whose local harbor plant was destroyed by a mysterious fire the morning of March 28, has leased the plant formerly occupied by the Mission Woolen Mills in Santa Ana, V. R. G. Wilbur, general manager and secretary of the company, announces.

LOS ANGELES, CAL.—To replace a plant destroyed by fire at another site a short time ago, the Pacific Clay Products Company, American Bank Building, Los Angeles, expects to start construction on a new factory at Los Nietos, for the manufacture of firebrick and refractory shapes. This plant will have an initial output of 25,000 9-in. brick per day and will be laid out for a maximum capacity of 40,000. This is somewhat greater than the capacity of the old plant, but the quantity, it is expected, will be absorbed by the territory supplied by the old plant, which means that the consumption in that territory has increased. With the establishment of quieter conditions and equitable freight rates the company expects to ship firebrick and refractories to Mexico and other Pacific Coast countries.

LOS ANGELES, CAL.—The city of Los Angeles must pay \$525,000 for the water rights in the Owens River gorge, according to the verdict of a jury in the United States District Court. The municipality brought suit against the Southern Sierras Power Company to condemn the property on June 9, 1920. The power company in its answer claimed that it supplied power from the Adams plant, located on the gorge, to numerous smaller municipalities of Southern California and that Los Angeles, because it was a larger city, did not have the right to take the source of power from other cities. Judge Wm. C. Van Fleet held that the power company built and improved the Adams plant after the suit had been filed by the municipality, at its own peril, and could not demand payment from the city of Los Angeles for these improvements. Witnesses for the city valued the water rights at from \$130,000 to \$250,000. Those for the defendant claimed that they were worth anywhere from \$900,000 to \$1,250,000.

THE INTERMOUNTAIN DISTRICT

IDAHO FALLS, IDA.—The Shelley Light & Power Company has been granted a franchise to erect, construct and maintain electric power lines in Bonneville county, Idaho.

PRICE, UTAH.—The city of Price has applied to the Public Utilities Commission of Utah for permission to increase its rates to retail users of power up to the schedules recently allowed by the Commission to the Utah Power & Light Company.

BUHL, IDA.—A new street lighting system has recently been installed in the town of Buhl. The installation consists of eighty-nine 400-c.p., 6.6-amp. series lamps, on ornamental posts of Cutter Arcadian style with Sollux Senior tops. The ornamental posts are set directly opposite each other, with eight posts to the block.

LOGAN, UTAH.—The General Appraisal Company of Seattle has completed its investigation of the city electric light plant, and in a report submitted to the city commission fixes the value of the city plant at \$275,000. It is said the commission will shortly make some definite proposal relative to the betterment of the plant, to the taxpayers of the city.

TONOPAH, NEV.—The suit, brought by citizens of Mina, Nev., to test the validity of the Mineral county bonds, issued for the purpose of constructing a power line into the Simon Silver-Lead Camp, was decided in favor of the county. It is reported that the Supervisors of Mineral county will order the bonds sold and work on the power line started immediately.

BRIGHAM CITY, UTAH.—The steel bands and redwood staves to be used in constructing the wood stave pipe line for the new municipal electric power plant are now on the ground, and construction work has commenced. The pipe line will be entirely exposed and will rest upon cement saddles, which are being manufactured at the mouth of the canyon. The foundation of the power house is in, and the big spillway is now being cemented.

SALT LAKE CITY, UTAH.—The controversy between the Silver King Coalition Mines Company and the American Smelting & Refining Company has been adjusted to the satisfaction of both corporations. The controversy arose in connection with notification received by the Silver King Coalition Mining Company and the Daly-West Mining Company from the American Smelting & Refining Company that no ores would be received after May 15 under the terms of the contracts which had several years to run, because operating costs had advanced so that it was impossible to make a profit by treating the ores at the rates agreed upon. The controversy in connection with the contract between the smelting company and the Daly-West Mining Company has not yet been adjusted.



Conventions are always a great source of inspiration to us, and as there are so many of them this time of year we have thought up a few little helpful suggestions for those who attend them.

Do not practice golf in the lobby. You may lose a ball in one of the lighting fixtures.

Do not slide down the bannisters. It wears out the varnish.

Do not shoot craps during dinner. They may get in the soup.

Do not park your car in the dining room. The waitress may trip over it.

Do not read the newspaper during sessions. It prevents the man behind you from counting the buttons on the speaker's coat.

Do not shake your fountain pen on the table cloth. It wastes the ink.

Do not continue poker parties later than 6 a. m. Someone may telephone you before breakfast and break your first sleep.

Do not leave chewing gum under the dining room chairs. It is easier to find again if parked behind the door.

Do not throw things at the speakers. They may forget what they were going to say.

* * *

CAUTIONARY TALES FOR THE YOUNG

An active young matron named Gleaner
Was using her vacuum cleaner;
The baby at play
Got right in the way
Since when there is no one has seen her.

* * *

SCIENTIFIC POETRY

A writer in one of our contemporaries draws attention to the interesting results of applying the engineering mind to poetry. Quoting from Longfellow:

Swift of foot was Hiawatha;
He could shoot an arrow from him,
And run forward with such fleetness
That the arrow fell behind him!
Strong of arm was Hiawatha;
He could shoot ten arrows upward,
Shoot them with such strength and swiftness,
That the tenth had left the bow-string
Ere the first to earth had fallen!

he refers to this problem in a technical text book:

"Compute the running speed of Hiawatha in miles per hour, assuming that he could shoot ninety arrows per minute and that when shooting forward he aimed at an angle of 45 degrees with the horizontal."

The answer given is "About 46 miles per hour"—which puts Charlie Faddock quite in the shade.

Tennyson's lines,

Every moment dies a man,
Every moment one is born

are said to have been sharply criticized by the inventor of the calculating machine. This gentleman wrote severely to the poet and explained that the true ratio was about one to one-sixteenth, and that the lines should be changed. Something to this effect, we presume:

One sixteenth each moment dies
For each one that opes his eyes.

The following moving lines picturing the decay of the stellar system—

The stars shall fade away, the sun himself
Grow dim with age, and nature sink in years

are promptly crushed to earth by an irate and erudite scientist with the following poser:

"This is a kinetic, rather than a dynamic conclusion, and it is dynamically controverted by the fact that the velocity of light, the velocity of electro-dynamic action, and the velocity of the gravitating time-integral of solar rotation, are each equivalent to the thermal unit of velocity at the center of our system which is indicated by Laplace's principle of periodicity."

So there!

* * *

Monotony is a pretty tough proposition. An auto collided with a street car, and after the evidence had been collected and the car was ready to operate again, a passenger remarked, "Well, not much damage done, but it broke the monotony." "Aye tank not," said the Swedish conductor. "He yust bent the fender."

* * *

ELECTRICAL HYBRIDS—SERIES II



6. The Electric Corderly

Electric corderlies are bound
By very strict conventions;
They run from place to place, and have
Convenient dimensions.

They're helpless when they're unattached
And so you seldom find them
Carrying on their work without
Some source of power behind them.

Journal of Electricity and Western Industry

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July 15, 1921

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Write for sample and catalogue.

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Here at last is the practical flexible cord for portable electrical machinery.

It cannot kink or curl, but always lies flat on the ground.

It may be run through water and oil puddles without harming the insulation.

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It may be dragged along a crushed stone roadway, or driven over by heavy trucks, without harm to the outer wall.

Why? Because we have built its insulating wall just as they build Cord Tires.



We use a tire tread rubber compound—we put a strong cord braid inside—and we vulcanize under tons of compression.

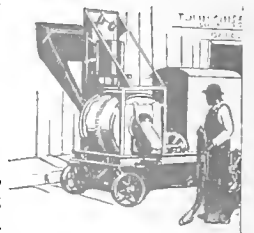
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us that they had a length of Super-Service Cord in use on a floor scrubbing machine for more than two months—whereas the longest life recorded for any other cord was 10 days to 2 weeks!

We make mining machine and mine locomotive gathering cables the same way, so you can see the margin of safety for you in this flexible cord.



Do you make scrubbers, drills, riveters, paint sprayers, welding torches, soldering irons, stage lights or noise machines, fans, portable blowers, auto tire air pumps, etc.? Do you use such machinery? Then get in touch with us today. Equip them with Super-Service Cord. It costs more, but lasts many times longer.

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Journal of Electricity and Western Industry

ROBERT SIBLEY, Editor

A McGraw-Hill Publication

Founded 1887

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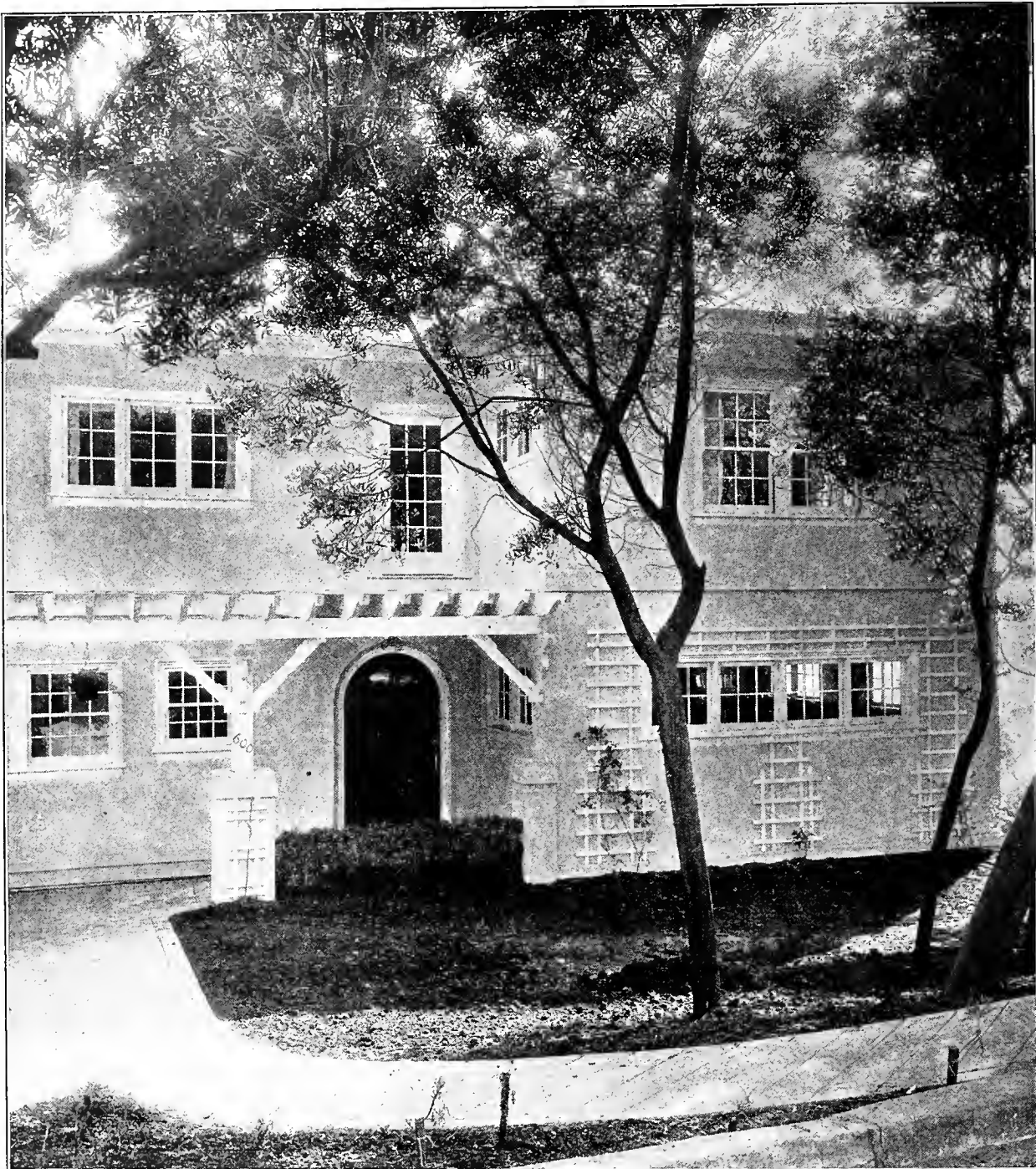
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A New Electrical Home Record

THE fallacy of precedent was never more clearly demonstrated than in this beautiful home situated in Berkeley, California, and just completed by its owner, H. J. Gute. In the electrification of this residence a number of innovations have been introduced, to the edification of many electrical men who said "It can't be done." Sixty circuits with two and a quarter miles of wire and one hundred and seventy outlets provide for the electrical service in this home. Still more distinc-

tive are a 6000-watt fireplace, a 6000-watt automatic water heater, 20-ampere outlets in each room fed by 10-gage wire, exterior flood-lighting by four 300-watt lamps, and several cross-connecting switches. Great beauty and convenience are attained in both exterior and interior illumination. As the most completely electrified residence known, this is yet another indication of the place which good lighting and electrical convenience are taking in the home-building ideals of the West.

Journal of Electricity and Western Industry

A publication devoted to the upbuilding of the great industrial West and the countries bordering on the Pacific

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Interpreting Western progress through the application of electric power, light, and heat in industry and in the home

Vol. 47, No. 2

SAN FRANCISCO, JULY 15, 1921

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Urge the Lessening of Non-Taxable Securities

FOR some years prior to the war the non-taxable security, largely in the nature of municipal and improvement district bonds, while competing with the public utility securities, made little serious inroad into the field of finance of the public service industry. But the issuance of Liberty Loan securities and other tax free stocks and bonds to the extent of billions of dollars during the war period and since that time, has been a very serious impediment to present day financing. Particularly has this become true in connection with the income tax, where large investors may purchase tax free bonds and thus evade the carrying of a share in the burden of public maintenance or the paying of public indebtedness.

The easy availability of securities of this nature is creating an acute situation, unbalancing not only the just distribution of the public burden upon citizens generally, but retarding the financing of new work so sorely needed at the present time in the public service industry.

Franklin T. Griffith, president of the Northwest Electric Light & Power Association, in striking the keynote of the recent convention of his association at Portland, drove this point home most emphatically, and Journal of Electricity and Western Industry urges its readers throughout the West to see to it that the issuance of non-taxable securities in the future be materially cut down in volume, and thus make present day wealth or income meet its just tax burden.

At the present time industrial and commercial firms are seeking to cut down on all expenses, and as a consequence it is rather difficult to sell them better illumination. This leaves the home as the field which should be covered, and it is through the contractor-dealer that this idea must be put over. It is customary for the housekeeper to get renewals necessary for her home from the contractor-dealer, and he should take advantage of this opportunity to find out where and how the lamps that are being bought are to be used, and to recommend lamps of the proper intensity. Not only should the matter of lamps be taken into consideration by the contractor-dealer, but the question of proper fixtures should also be sold to the buyer.

It is possible for the contractor-dealers by selling proper illumination to teach the general public the advantages of better lighting, and when this is appreciated in the homes then it will not be a difficult problem to apply the same principles to the store or factory, as the public will be quick to sense the difference between proper and improper illumination. When the public as a whole demands anything it usually gets it, and the workman who goes from a well lighted home to a poorly lighted plant to work is bound to be disgruntled and dissatisfied, and will make himself heard. The proper place to teach correct illumination is in the home and now is the time for this to be done.

Selling Lighting For the Home

With an average annual expenditure of over eighty cents per capita for street lighting, the West again has pointed the way to things electrical. Not only does the West lead in intensive use of electricity and in records in engineering achievement, but the cities of the West have been the first in the country to develop the idea of better street lighting. The average per capita expenditure for the United States for street lighting is seventy-one cents, and Montana leads all of the states in the Union with a per capita expenditure of \$1.19.

The West Leads in Street Lighting

Salt Lake City has recently ordered an extension of its "White Way" that is one and one-half times as large as the initial installation, and the "Path of Gold" in San Francisco was maintained by the Downtown Association of that city in spite of the fact that citizens composing this organization have felt the effect of the reconstruction period. Los Angeles is another example of a western city that has gone ahead with proper street lighting in its "Radiant Way."

Good street lighting should be installed in every city of the West, as it not only symbolizes the fact that electric power is making possible the advancement of the West, but it more than pays for itself. It has been proven that among the advantages that a "White Way" gives to a community are increased business on the street on which it is installed; it

decreases crime and robbery, attracts industries, promotes civic pride and in many other ways makes for a better community. The West should be proud of the fact that it leads in this movement and should strive to maintain its lead.

A coroner's jury holds the lighting committee of the Board of Supervisors responsible for the death of Margaret Reilly, who was struck by an automobile the latter part of February on the north side of the panhandle of Golden Gate Park, in San Francisco. The woman, who was seventy years old, died later at the Central Emergency hospital from the injuries. The coroner's jury exonerates the driver of the machine, and states that the accident was due to the improper lighting of the street, and that other juries have recommended to the lighting committee that the street be lighted, which recommendation had been ignored. The jury, therefore, charged the lighting committee with negligence, and holds it responsible for the woman's death.

There is a deep and silent message in this report well worthy of thoughtful consideration, not only by lighting committees of municipalities but also by men of the industry in every line of human endeavor where human life is at stake, dependent upon the performance of duty.

The electrical industry of the West has contributed to the standard of ethics of the nation one of the most valuable examples on record. A group of men have started out to endeavor to put over an idea in an educational way, so that the public might get a clearer conception of what electricity is doing for the upbuilding of the nation. The "Electrical Home" idea sprang up in California as one of the most direct ways of enlightening the public on the installation of convenience outlets in the home. The plan has proved a great success, and the public generally, and in particular architects and builders, have received a wonderful educational broadside. That no manufacturer or contributor to the campaign should endeavor to capitalize upon these electrical homes in any other way than through the broad general idea, was agreed to by all in this wonderful campaign. Particularly was it agreed that none of the apparatus, wiring devices, or appliances installed in the home should be considered as having been placed there as a particular award of merit for that particular manufacturer, but rather as an illustration of general quality service by the industry as a whole. It is well that these broad standards of ethics be maintained, and it is well that every branch of the industry see to it that they be not violated. In case of any violation retraction should be demanded, and if a second offense occurs, the full weight of the industry should be thrown into the affair to see to it that the public is properly informed on the situation.

The installation of more convenience outlets in the home has been the great accomplishment of the year in the West in the matter of increasing household uses of electricity, and in months to come this increased use of the method electrical will be felt ten-fold where these installations have taken place.

It is difficult to give full credit to all those who took part in this constructive work, for practically every real worker in the industry has had a hand in it; but to Garnett Young must be given a full measure of credit for his pioneer paper before the Pacific Coast Section, N. E. L. A. Tracy Bibbins, too, who carried the idea to the manufacturers and others interested, must also be given a lion's share. And then followed the San Francisco Electrical Development League and the California Electrical Co-operative Campaign with the magnificent new idea—the home electrical—that has spread so rapidly over California, and has passed on to the nation as a whole to such an extent that in fully a dozen different states today the idea of the home electrical is being put over, and the necessity for convenience outlets is being impressed upon architect and house builder everywhere.

Significant of the great strides which this idea is making among western citizens as a whole, quite apart from organized effort, is the achievement depicted in the frontispiece of this issue—the most completely electrified home in the world. When the independent home builder himself conceives a home of this kind, the electrical industry may feel confident that its educational efforts are bringing rich results.

There has been agitation recently for the carrying out of a survey of the United States in order to locate all possible oil sources. The urgency of this investigation is apparent when we realize that the proven resources of the country's oil fields as now known will be exhausted within twelve years, if the industries continue to use oil at the rate it is now consumed. No one can say, of course, that there are not vast reservoirs of oil still remaining under portions of the United States as yet innocent of the drill. The probability is against any large quantity of oil being discovered in this way, however. The Geologic Survey has long made it a part of its work to look for oil in any district where the geologic formations suggested the possibility of its occurrence—and the tremendous fortunes which have been made by the possessors of producing wells are sufficient incentive to have induced private enterprise to carry on similar investigations.

No one predicts that oil will actually be exhausted in this country within the next ten years—but what is a safe conclusion is that oil has probably reached the maximum extent of its use. Indeed, the pressure which will come from those industries using the higher priced derivatives of petroleum must tend

Notable Advance in the Home Electrical

The Oil Problem

to keep up the price of crude oil, thus restricting its use wherever a substitute is possible and mechanically lengthening the life of the oil fields.

This is the situation which the electrical industry faces. At the present time there is a considerable block of power generated in oil-operated plants in the West, particularly in California. The actual amount of oil consumed is not large, perhaps, nor is the power generated an important factor as compared with that generated by water power. It is obvious that the future can allow practically no increase in oil consumption, however. More efficient methods, perhaps the substitution of Diesel engines for present equipment, may enable the power companies to make more out of what is obtainable. The future power supplies of the West, however, must come from some other source. Neither coal nor wood waste at present can compete to any great extent with water power generation—and no other fuel appears immediately available.

These same factors apply to industry at large. Something like thirty per cent of the oil production of California is used by the railroads at the present time, and an equal amount in various manufacturing enterprises. Inevitably the amount used in both of these fields must be cut down. The handwriting on the wall as it is decipherable at the present time points to hydroelectric energy as the major source of power for the future industrial growth of the West. It is this service which the public service industry of the West must prepare itself to render.

At a recent meeting of the California Industries Association, A. F. Haines, vice-president and general manager of the Admiral Line, brought out a very important point—a way in which our manufacturers can assist American shipping. Under the present method of procedure an American firm purchasing equipment, apparatus, or supplies in foreign countries is quoted a price by the foreign seller C. I. S. This means that the local purchaser has the goods delivered at his door, freight and insurance prepaid, and he is thereby relieved from any trouble or inconvenience in securing them.

Conversely, when the foreign buyer comes to the United States to make his purchases he is quoted a price F. O. B. factory. The local manufacturer does not wish to be bothered with the care of securing space for a trans-Pacific shipment, arranging for the insurance, consular records, etc. And therefore, to make it easy for himself, he quotes F. O. B. factory.

In both cases the trans-Pacific shipment of the merchandise is in the control of foreigners. Their natural preference then for shipment will be in ships which sail under their own native flags. This, therefore, works to the disadvantage of American shipping.

To all good Americans, therefore, it would seem that in either case, whether purchaser or seller, the American firm should control the shipment and thus be in a position to specify the trans-Pacific carriage in American ships.

It has been estimated that there is available in possible uses of hogged fuel in the Northwest an annual energy totaling something like 3,500,000,000 kw-hr. Of course a great portion of this vast amount of energy could never be made use of. However, the constant and increasing demand for this type of fuel in the various central stations, as well as in many of the isolated installations of the Northwest, calls today for improved stokers. Stokers designed for firing coal do not give enough air for proper combustion when used on hogged fuel. It is well known, however, that stokers now in use give greater boiler rating while they last than is possible when hogged fuel is burned in a Dutch oven—which is invariably the way this type of fuel is burned throughout the Northwest. In discussing this matter with practical engineers in that territory the report always comes back that experiments and tests in connection with the burning of hogged fuel, including experiments with stokers, show that there are economies to be effected by the use of stokers for firing hogged fuel, but that a stoker designed especially to meet the requirements of this particular type of fuel is necessary. Attention is called to this fact editorially in order that thought may be given to a more efficient use of hogged fuel in the Northwest, in order that the cost of production may be lowered in the steam electric generating plants of the West.

The various flying squadrons that have gone out from cities of the West to the rural towns and villages have developed a healthier feeling between the country districts and the city districts, and at the same time have had called to their attention several outstanding instances wherein the country is lacking today and in which the city may be of assistance. Thus in certain parts of California it is found that the savings banks in small rural communities have been tied up in agricultural loans such as financing the rice owners, the cotton growers, and so on. And, too, wonderful as our western roads are, cross country laterals are lacking, hotel accommodations are insufficient in many of the smaller towns, and in fact in some of them do not exist at all. Tourists will not travel in such districts, for most of the tourists who visit the West today are people of means, and are accustomed to the best that there is. More money is needed for water development, and for power development, and in many rural communities large land owners occupy practically all the available land, while lack of enterprise prevails in others.

There are today powerful cities in the West that rank well up among the very best of their kind in the nation, and these cities, in order to contribute their full usefulness and helpfulness to the nation, must see to it that the back country, or rural districts, upon which they are so dependent for sustenance and growth are properly financed and developed to meet the needs of the day.

Control of Foreign Shipments

Some Rural Needs

Western Comment on Current Events

Editorial Notes and Readers' Views on the Outstanding Aspects of Financing, Trade Promotion, Legislative and Associated Topics that have a Special Bearing on Western Business

Western Utility is the Second Largest in United States

Pacific Gas & Electric Company with Thirty-four Millions Gross Revenue Is Exceeded Only by Commonwealth Edison of Chicago

The financial showing of the Pacific Gas & Electric Company is of especial interest to Western investors, as approximately \$105,000,000 worth of its stocks and bonds are held locally by more than 30,000 private investors, savings banks and other fiduciary institutions. The amount available for the payment of fixed charges was \$11,935,235, or 2.4 times all interest charges. After paying the regular 6% dividend on the preferred stock there remained a balance of \$2,142,026, and the common stock dividend was earned with a margin of \$441,180. The annual report of the company just published shows that the gross operating revenue for the year was \$34,475,372, and that for the Commonwealth Edison Co., of Chicago, \$35,317,134.

The company's contribution to the upbuilding of the material resources of the state and the development of its agricultural, mining, manufacturing and other basic industries is indicated by the fact that it has either completed or will complete at an early date, 138,741 hp. in additional hydroelectric energy, and 16,756 hp. of additional energy from its steam plants. In this and other new construction the company expended \$11,314,609 during 1920. In pursuance of its policy of maintaining its properties in first-class physical condition there was expended for maintenance during the year \$2,740,210, in addition to a reserve against depreciation of \$1,788,302. The net working assets are reported as \$12,503,084, an increase of over a million dollars compared with that at the close of the preceding year.

The most important incidents of the year as reviewed by John A. Britton, vice-president and general manager, are:

- January 1, 1920—Merging into P. G. & E. system of the leased property of Sierra and S. F. Power Company.
- January 1, 1920—Commencement of second circuit on Wise towers from Newark to Wise Power House—170 miles, completed January 1, 1921.
- June 1, 1920—Commencement of work on Hat Creek Plants Nos. 1 and 2, installed capacity 33,512 hp.—to be completed July 15, 1921.
- July 1, 1920—Commenced work on steam turbine in Station "C," Oakland—16,756 hp.—completed March, 1921.
- July 1, 1920—Commenced work on high pressure gas transmission lines from Sacramento to Woodland.

July 10, 1920—15 per cent surcharge on electric rates granted by Railroad Commission.

July 24, 1920—General increase in gas rates and establishment of fixed schedules.

August 1, 1920—Commencement of work on 10,054-hp. hydro-electric plant at Spring Gap, on Stanislaus River, to be completed July 15, 1921.

October 15, 1920—Tie-in with system of San Joaquin Light & Power Corporation.

October 27, 1920—Completion of Spaulding Plant No. 2—1,341 hp.

November 1, 1920—Commencement of work on Pit River Plant No. 1—93,834 hp.—to be completed in spring of 1922.

The company has made an exceptional showing both financially and from the viewpoint of service to the consumers, of whom there were 569,360 at the end of 1920. The electric energy sold during the year amounted to 789,922,625 kw-hr., an increase of almost twenty per cent over that sold during 1919.

Western Newspapers Urging Power Company Support

Wide Understanding of Industrial Needs of West Shown in Response from Daily Press as Result of Del Monte Conference

The recent industrial conference at Del Monte, held under the auspices of the Pacific Coast Division, N. E. L. A., is having its effect throughout the West. The industrial data presented at that conference was featured in some 250 different newspapers of the West, and in many instances occupied the front columns of the paper with double-column scare-heads. The average length appearing in a newspaper covered something like a column. The editorial comment that has been brought out has been extremely gratifying. The clear vision of western needs brought out in the editorial which appeared in the Fresno Republican on June 21, 1921, under the heading "Fiat Lux," is typical:

"We must get closer in touch with the men who belong to this industrial priesthood of light. We must understand what they are doing for us, as well as for themselves. We must understand their ideals, and their practical plans. We must know what they are doing with copper wires, with stone, with poles and with the money that is needed to buy these things. We must know how to get this money, whose money it is. As far as possible, we must encourage the putting of money into these things.

"As far as possible, this should be our money. We should realize that it will be for the better working of this light and power system that enters into all our homes, if it is our money that turns the wheels and catches the water, and conducts it through the great tubes. It will be much better if it is our money that guarantees the bonds with which

these enterprises are financed. In spite of the people who talk vaguely about financing and having someone else do something, it is far better if these things are 'owned' and owned right here in the San Joaquin Valley of which we are a part.

"This is not a stock sale appeal for the San Joaquin Light & Power Company, or for the Southern California Edison Company, or for the Pacific Gas & Electric Company. We would not object if it were.

"This is an attempt to help the people of Central California realize that their present and their future happiness rests in part on their participation in the ownership of these corporations. And to make them realize that their happiness and prosperity depend in part on the faithfulness, the sagacity and the corps spirit of the men in the electrical business, and to encourage them by an understanding and an appreciation of their problems.

"The life that we are leading is a very dependent one. We know how much we depend on the farmer, on the merchant, on the professional man. We are not always conscious of what we owe to the engineer and to the promoter.

"The divine command, 'Let there be light,' did not lose its efficacy, when it was uttered on the fourth day. And it was addressed to all of us, now, as well as then."

Industrial Advertising Conference Proposed

Movement Started to Fill Gap in Associated Advertising Clubs' Conventions — Eastern Associations Initiate Movement

While industrial advertisers were conspicuous by their absence at the Atlanta convention of the Associated Advertising Clubs, those who attended launched a well defined movement to put industrial advertising "on the map" in future conventions. The Engineering Advertisers' Association of Chicago and the Technical Publicity Association of New York form the nucleus of the movement which all industrial advertising interests will be invited to join. It was the unanimous opinion of those present that more attention should be given to industrial advertising and that definite plans should be made to put on an attractive program in Milwaukee in 1922. It is the intention to put on a program that will be helpful to the advertising manager of the industrial plant, both large and small. The importance of promoting the movement of goods from industry to industry and the wide field for industrial advertising are well understood. Western agricultural products are known the world over, and an extended market has resulted through the use of national advertising. With this conspicuous example before them the Western manufacturers should take an active interest in the convention of the Associated Advertising Clubs and the special features that will be included in the next annual convention.

Japan Facing a Fuel Shortage

Oriental Correspondent Reports Extensive Hydroelectric Development as Fuel Conservation Measure in Japan

Cruse Carriel, formerly associated with Journal of Electricity and Western Industry but now acting as Oriental correspondent, writes interestingly concerning the intensive power program that is under way in Japan. In brief, Mr. Carriel says:

"To facilitate the growth of the manufacturing industry in Japan, the Japanese government proposes to systematize the installation and operation of hydroelectric plants, which on one island alone, it is estimated, will increase the output from 1,300,000 horsepower to 7,500,000 horsepower. The Department of Communications has been provided with an appropriation of 67,000 yen for preliminary surveys.

"At the end of February the number of companies engaged in the production of electricity was 820, capitalized at ¥1,318,517,000 and operating steam and hydro plants which produced 1,399,440 kilowatts.

"Japan's domestic fuel situation is such as to make the development of hydro-electricity generation almost imperative. The deposits of eight billion tons of coal will be exhausted within half a century, it is estimated, and at the same time the electrification of the railroads seems to be the only remedy for present high costs of operation, according to experts.

"As a preliminary to the initiation of the contemplated program of development, a number of amalgamations of hydroelectric projects have been effected and more are in process of being effected. Plans at present contemplate dividing Honshy, the main island, into four districts.

"The Ou district has a present generating capacity of 85,000 horsepower at its 86 installations, which it is expected to increase by 668,000 horsepower by 400 additional plants. In Kwanto district, 184 plants produce 768,000 horsepower, which it is proposed to increase to 2,530,000 horsepower by the establishment of 560 plants. Kwansai's 153 installations now produce 270,000 horsepower, which is to be increased to 1,912,000 horsepower by the addition of plants at 400 points. Chugoku now generates 84,000 horsepower with 63 establishments, to which number will be added 160 plants producing 238,000 horsepower."

Industrial Survey Planned by Salt Lake City

New City Planning Methods Taken Up By Commercial Men of Utah Metropolis to Further Local Industrial Development

The achievement of a unified western development toward which each district will contribute those elements for which its location and characteristics best fit it, has long been the aim of Journal of Electricity and Western Industry. The first step toward the accomplishment of this end is undoubtedly the industrial analysis of the possibilities of each local community. Salt Lake City has recently joined the ranks of the western cities who are undertaking this task, through an industrial survey which is being conducted under the direction of the Commercial Club.

The subjects which will be studied and outlined include railroads, highways, streets, street and inter-urban railways, utilization of land, freight rates, development of industry in conformity with proximity of raw materials, industrial terminal, development of surrounding territory, power, water system, grade crossing elimination, housing for employes, labor, irrigation and drainage. After the survey is completed a general plan will be outlined whereby the city will be able to make the most rapid advancement in an industrial way.

The work is in charge of M. O. Bicknell, of the industrial department of the Western Pacific Railroad, assisted by J. E. Light, of the Southern Pacific, F. E. Morris, secretary to the city commission, D. Carlos Kimball, president of the Salt Lake Real Estate Board, and Markham Cheever, chief engineer of the Utah Power & Light Company.



Delegates at the recent convention of the Northwest Electric Light &

Northwest Electric Light & Power Association Convention

Methods of Establishing Better Public Relations and Cooperation Within the Industry Featured at Enthusiastic Portland Gathering of Light and Power Men of the Northwest

The need for a better understanding between the public and public utilities and a discussion of means of bringing about a more desirable situation in this respect, occupied the major portion of the time of those attending the fourteenth annual convention of the Northwest Electric Light and Power Association (geographic division of the N. E. L. A.), held in Portland, June 15 to 18.

"Fair dealing with the public served," said Franklin T. Griffith, president of the Northwest Association, in his presidential address, "is the only means of securing the good will of the public which is absolutely essential to the prosperity and growth of public utilities. Good will can be secured in return for adequate service at reasonable rates, and every effort should be put forth by men engaged in our industry to cultivate and increase the confidence of the public in public utilities." Mr. Griffith called attention to the constructive work done along these lines by the legislative committees in the various states embraced in the Association. "They have faithfully and completely discharged their duties and by their straightforward and conscientious presentation of facts to the representatives of the people in the various state legislatures have aided in procuring helpful legislation and in defeating much that might have been harmful. The success of our legislative committees has been due to a strict observance of the policy of the Association to stand for a square deal, and a square deal only. This policy, coupled with the steadily growing public belief that unduly burdensome legislation directed at public utilities is certain to react to the disadvantage of the public served, is creating the conviction that the best interests of the people are subserved by according fair and equitable treatment to the utilities."

The question of finance, Mr. Griffith pointed out, is one of the most interesting and important consid-

erations facing utilities today. "The growth of the industry is necessitating a constant addition to the facilities for service and as limitations are placed upon utility earnings by the commissions, the funds necessarily required for expansion of facilities cannot, except in small part, be provided from earnings, and it is therefore necessary to finance improvements and betterments with outside capital secured through the sale of the utilities securities."

Local Stock Sales Important

"Financing of utilities through the sale of stock locally," said Mr. Griffith, "would be of incalculable benefit to the industry and of hardly less value to the people of the community served, and would materially assist the utility in establishing and maintaining that spirit of confidence and good will so essential to true cooperation."

Education Necessary

A nation-wide campaign to educate the American public in the increased uses of electricity and also on the manner of conduct and control of public service corporations is on the verge of being launched, according to M. H. Aylesworth, executive manager of the National Electric Light Association, who spoke on "The National Electric Light Association." Methods to be employed in bringing the public to a closer understanding of the problems of the electrical world through publicity, advertising and direct communication, and the reasons why such education was imperative, were dealt with by Mr. Aylesworth. He said in part: "The average consumer does not realize the share he holds in public utilities over and above his municipal interest in them. The 27,000 banks throughout the country backed by 29,000,000 depositors have assets in public utility securities amounting to \$1,700,000,000, or an average of \$63.00 to each depositor. Insurance



Power Association grouped in front of the Multnomah Hotel, Portland, Ore.

companies likewise hold \$300,000,000 in such investments, and in every payment of insurance premiums the receiver gets a portion of the earnings of his own public service corporation. In view of the facts, it develops that the average citizen has quite an interest in public utilities."

Would Aid Back to Farm Movement

The solution of the back to the farm movement, a problem which is occupying the attention of the business men of the country, in the opinion of Mr. Aylesworth, lies in the more complete electrification of the country homes. There are 2,000,000 country homes in the nation electrified at the present time, and 4,000,000 more which if supplied with electric service, would give the farmer's wife all of the comforts now enjoyed by the woman of the city, and prove a great stimulus to the "back to the farm movement."

Functions of the Utility Commission

The functions of federal and state regulatory bodies over public service corporations and the relations between producer and consumer of electricity constituted the address read by E. V. Kuykendall, director of the department of public works for the state of Washington. To establish good will between such bodies, corporations and the public, was the most important project confronting the electricity producer, he pointed out. He said there are two influences that militate against justice to utilities—the ancient prejudice against corporations and the natural element of selfishness which sometimes dominates the consumer. He believes there are indications everywhere that the day of a better feeling and understanding between the public and the utilities is dawning, and the best way to hasten this understanding is to educate the public into the manner of governing, regulating and fixing the rates for public utilities, even if it is necessary to incorporate such education in the public schools. Discourteous treatment of the public by company employes and lack of diplomacy should be classed, in his opinion, with incompetency as a cause for dismissal. It is his belief that good will advertising is largely valueless unless it explains the fundamentals of rate-making, valuation and accounting.

Cooperation Essential

The importance of cooperation between the various branches of the electrical industry and the good that will accrue from a better understanding of problems and needs of each branch by the others, was discussed by Stephen I. Miller, the newly appointed secretary-manager of the Association, who made it clear that it was not intended to conduct merely a campaign but that a long period of steady growth was desired, and that results must not be expected too soon. Others who spoke were G. L. Myers, on "Winning Public Support and Confidence"; Robert Sibley, who spoke on "Western Industrial Development"; C. E. Driver, whose subject was "Public Utility Securities," and L. T. Merwin, who dealt with "The Essentials of Power Development."

Entertainment

The convention guests were entertained by scenic drives, parties and teas for the ladies, and tours of inspection and golf for the men. The "Kilo Watt" golf cup was won by Prof. R. H. Dearborn, of the Oregon Agricultural College. A bag for golf clubs was awarded by E. F. Whitney of the General Electric Company for the low gross score.

Election of Officers

The annual election of officers resulted in the election of W. R. Putnam, vice-president and general manager of the Idaho Power Company; president, and for vice-presidents: J. M. Kincaid, for Washington; I. E. Rockwell, for Idaho; P. M. Parry, for Utah; and G. L. Myers, for Oregon. C. M. Brewer, L. A. McArthur and L. B. Faulkner were elected members of the executive committee.

PRACTICAL ELECTRICITY SERIES

The material published in these pages under the title "Problem Course in Electricity," by H. H. Bliss, is now being collected and will shortly be issued in book form. Some additional matter, including problems and diagrams, will be added to make the volume an inclusive practical text book.

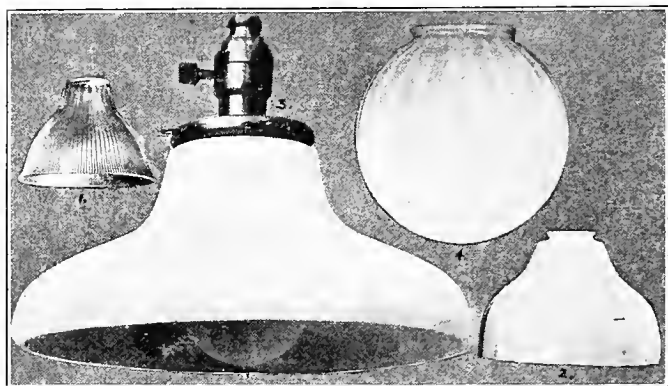
Selecting the Right Lamp for the Commercial Lighting Fixture

How to Maintain a High Standard of Illumination in Your Business Plant by
Choosing the Right Lamp to Fit the Fixture
When It Comes to Renewal

BY W. H. RADEMACHER

Engineer, Edison Lamp Works, General Electric Company

Much discussion has been devoted in the past to the question of proper illumination of commercial establishments, both from the standpoint of quantity of illumination desirable, the general application of lighting units, and artistic considerations. That good illumination is essential, and an important exponent of better merchandising, is generally conceded. How-



Figs. 1, 2, 3 and 4

ever, for the maintenance of a high standard of lighting there also are after considerations to which we must give careful attention.

Lamp Replacements

Maintenance is such a factor, and under this head comes the subdivision—lamp replacements. This, to many, is a seemingly small matter, but unfortunately the small matters are the ones which are either most frequently neglected or abused, and this is one which has a decidedly important bearing on the preservation of good illumination. It should be a comparatively easy matter to make proper replacements, for if we start with a unit of the correct size, in making our substitutions we have but to observe the rating of the initial equipment and duplicate it. While this procedure is sometimes religiously followed out, there are many times when it is not adhered to, a guess simply being made as to the proper size lamp. This results in the selection of a unit too large or too small. Frequently in the effort to increase quantity of illumination a larger lamp will be employed, and while a greater quantity of light sometimes results from such changes, it is possible that this gain will be offset by a sacrifice in quality which further may seriously mar our entire lighting effect.

While it would be convenient to have a table from which to pick off the size of lamps to be used in given fixtures under given conditions, it is impracticable to give a specific tabulation such as this because of the wide range of sizes in which commercial units are built, and the variations in intensities

that are encountered, depending upon store structure, character of merchandise and similar factors. When the initial planning of a lighting installation is carried on, a lamp is chosen which will give a sufficiently high intensity and a fixture is chosen which will give us suitable distribution of light and the element of decoration which is desired. The size of the fixture is a function of the lamp size and it is, therefore, all important that care be taken that the proper initial wattage be installed. When replacements of lamps are made, the fixture being a fixed quantity dictates the size of unit which is going to be employed, and, as will be pointed out later on, it is not always possible to change the size of lamp and still maintain standards of good illumination.

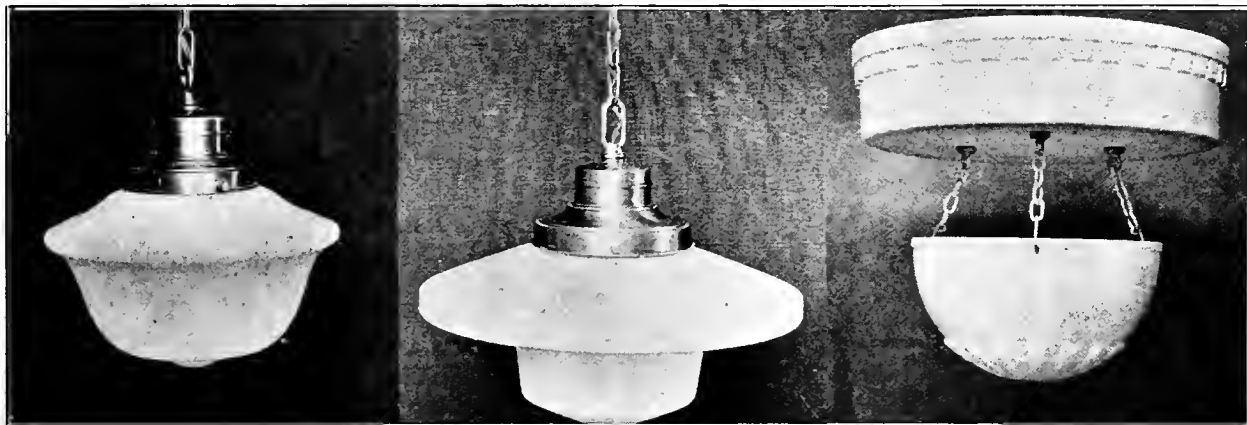
The following tabulation indicates in a general way the range of lamp sizes for which given characteristic units are designed.

General Type of Fixture	Diameter of Reflector Inches	Recommended Size of Lamp Watts	Bowl Finish
Deep Bowl—Prismatic Glass (Figure 1)	8 8½ 10¼ 12 14	75 100-150 200 300 600	Bowl Enameled
Deep Bowl—Opal Glass (Figure 2)	6 7 8 10 12 14	25, 40, 50 50, 60 75, 100, 150 200 300 500	Bowl Frosted or Enameled
Shallow Bowl—Opal Glass (Figure 3)	7 9 11 16	25, 40, 50 50, 60, 75 100, 150 200	Bowl Frosted or Enameled
Round Opal Glass Enclosing Globe (Figure 4)	8 10-12 14 16	75 100, 150 200 300, 500	Clear
Shallow Opal Glass Enclosing Globe (Figure 5)	12 14 16	75, 100, 150 100, 150, 200 200, 300, 500	Clear
Light Directing Glass Enclosing Globe (Figure 6)	14 17 20	100, 150 200, 300 300, 600	Clear
Semi-Enclosing Metal and Glass (Figure 7)	Top 16 Bowl 16 19 23	8¼ 11½ 14½ 100-150-200 200-300 500	Clear
Deep Bowl—Opal Glass—Semi-Indirect (Figure 8)	11 14 16	75-100-150 200-300-500 750-1000	Clear
Glass Enclosing—Semi-Indirect (Figure 9)	14 16 18	100-150 200 300-500	Clear
Glass and Metal—Semi-Indirect (Figure 10)	12 14 16	100-150 200 300-500	Clear
Totally Indirect Mirrored Glass (Figure 11)	9½ 12 16	100-150-200 300-500 750-1000	Clear
Totally Indirect Enameled Steel (Figure 12)	15 22	100-150-200 200-500-750-1000	Clear
Angle-Mirrored (Figure 13)	8 10	75 100-150	Clear
Angle-Prismatic Glass (Figure 14)	10%	100-150	

Choosing the Right Lamp for the Right Reflector

Most good reflectors are designed to be used with a particular size lamp having certain standard dimensions. To obtain satisfactory illumination we

Mazda C lamp, the bowl enamel treatment should preferably be resorted to. In open mouth reflectors an undersized lamp results first of all in a decrease in quantity of illumination due to reduction in size



Figs. 5, 6 and 7

must use the right lamp in the right reflector. Let us consider why we should choose the right lamp and what happens when we do not.

Many commercial establishments, particularly those in which comparatively old equipment is being

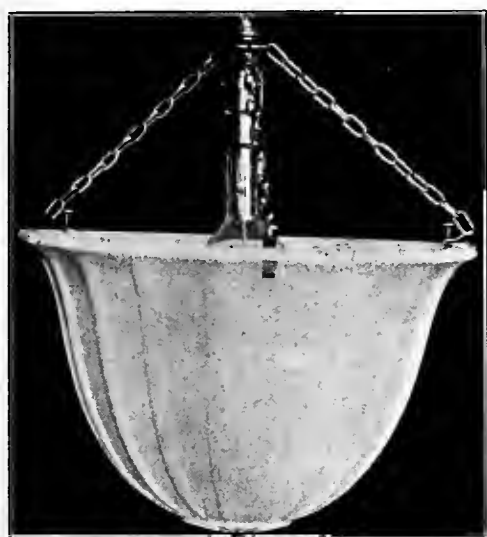
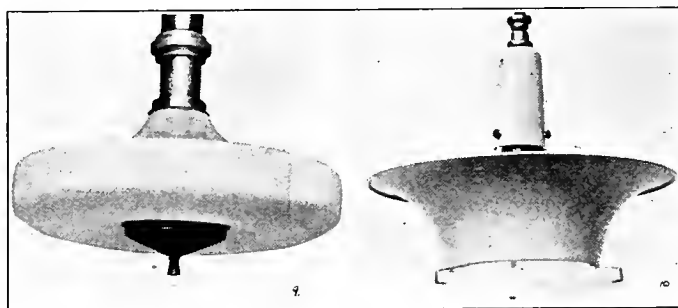


Fig. 8

used, are illuminated by direct lighting, employing reflectors of the open-mouth type. With such units when clear lamps are employed, there is usually some position from which the lamp filament may be viewed, and as a consequence of which eye discomfort is likely to be produced. Since the primary purpose of illumination is to aid us to see and to see comfortably, every effort should be made to choose lamps which will produce illumination of the most favorable character. For attaining this end in such instances we have at our disposal the bowl frosted and bowl enameled lamps, which conceal the lamp filaments quite effectively, improve the diffusion of light and make for a much better appearance in our lighting system. The frosting treatment is suitable for lamps having ratings of 75 watts and below. For units larger than that, because of the high intrinsic brilliancy of the light source which we have in the

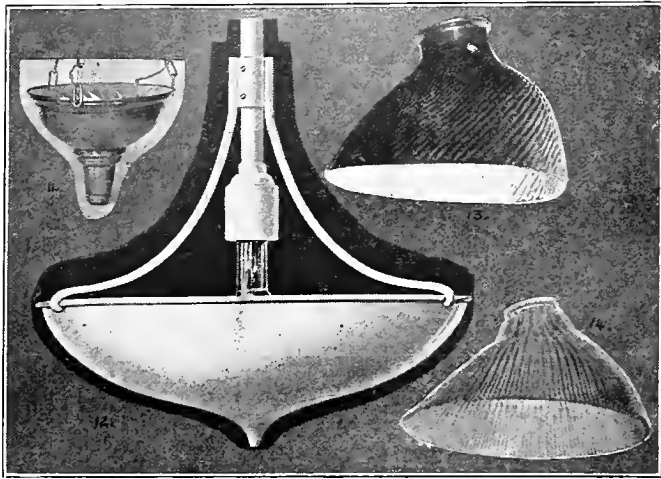
of lamp and a further decrease in illumination due to the fact that the small lamp will not be located properly with reference to the reflecting surface. Seldom, if ever, is an installation encountered where a reduction in size of lamp from original is justified, but far too many lighting installations are open to criticism in that sufficient wattage has not been provided for. On the other hand, with a reflector of this type, where an effort is made to increase the quantity of illumination by use of a bigger lamp, difficulties are usually encountered which more than offset the slightly higher intensity which is thus secured. The reflector is usually designed to house a lamp of a given size, and when properly chosen will effectively conceal the filament and properly diffuse and reflect the light rays. If too big a lamp is employed, however, the bulb will usually project beyond the end of the reflector, meaning that the filament will be distinctly visible, resulting in glare and a very displeasing appearance. This means that eye discomfort is produced and the inherent beauty of the fixture is greatly reduced. Also, when the light center is changed in this manner, that is, when the position of the filament with reference to the reflecting surface is modified, the value of the reflector as such is greatly reduced, the light is not properly



Figs. 9 and 10

controlled and consequently efficient reflection and satisfactory diffusion are not had. In other words, we consume energy to generate light which is wasted.

With the enclosing type unit considerable will be sacrificed if we do not use proper care in making our lamp selections. While the troubles are perhaps not quite so great, they are still sufficiently undesirable to be avoided. With a lamp too small we again encounter the evils of an inadequate intensity. Poor



Figs. 11, 12, 13 and 14

distribution likewise results and the reflective value of the unit is not fully utilized. Too large a lamp will mean too high a surface brilliancy in the glassware, or, in other words, glare. Changing the position of the light center may bring the filament into such a position within the glassware that it will be unevenly illuminated, and improper distribution will result; or, if the glass is of a light density, the filament of the lamp itself may be visible.

In semi-indirect and totally indirect units troubles encountered due to improperly re-lamping are quite similar. The use of a smaller lamp than that for which the glassware was designed means a reduction in illumination intensity, a decrease in the reflecting efficiency, a marring of the beauty of the glassware, in the case of a semi-indirect unit, and, sometimes because the lamp is raised to a higher position, the visibility of the light source from positions where it should not normally be seen. The resultant change in light distribution may be such that the light cut off will be objectionably affected, that is, a distinct line of demarkation between upward and downward light may occur along the wall or ceiling where it will look bad. In the semi-indirect unit where some light is transmitted directly downward, the increase in size of light source may raise the brilliancy of the glassware to an objectionable degree.

In lamp selection the question also sometimes arises as to whether the daylight lamp or regular Mazda lamp is preferable. In this regard it may be said that the daylight lamp should be employed only when it is desired to distinguish colors in approximately their true value, or where a distinctive illumination, simulating daylight, is required.

In choosing a lamp we should select the right one to give the proper intensity, to give suitable eye comfort and light distribution, and to maintain the proper artistic appearance of reflecting equipment.

All Commercial Groups Should Back Power Program

Why the Future Development of Western Industry Is Bound Up with Power Development Program

BY CHARLES HESTON PEIRSON
Southern California Edison Company

With part of the State a little behind, and the remainder of it barely abreast of the demand for power, which is fundamentally and absolutely essential to make it possible for factories to locate here, or for semi-arid land to be reclaimed and put under intensive cultivation, Chambers of Commerce can no longer pursue the work which they have so magnificently performed for years, unless the electric companies are able to keep at least one lap in advance of public necessity with their power development.

What commercial bodies can achieve if the companies can continue to develop a sufficient amount of hydroelectric power can be concretely demonstrated.

Applying the personal interest principle to its charted development program, contemplating bringing into service a minimum of 50,000 horsepower of hydroelectric energy for a number of years, the Southern California Edison Company has prepared statistics which will be most helpful to the executives of commercial bodies in planning their activities. This 50,000 horsepower of new development annually, applied to the diversified uses of the people in the counties of Los Angeles, Orange, San Bernardino, Riverside, Ventura, Santa Barbara, Kern, Kings and Fresno, is found to be adequate to provide for their upbuilding as follows:

It will create an annual growth in community wealth amounting to \$300,000,000; over \$100,000,000 will be expended for new homes, \$125,000,000 for offices and mercantile establishments, \$25,000,000 for manufacturing plants, \$23,000,000 for general civic improvements, such as roads, highways and transportation facilities; \$15,000,000 for electric generating and distributing systems; \$7,000,000 for improvements to farm lands; and \$5,000,000 for extensions to electric railways.

To community expansion these expenditures will mean an annual increase in population of 100,000; new homes, 20,000; acres of land brought into cultivation by electric power, 65,000; factories, 320; and the employment of 8,000 more industrial workers. It will require for this increase in business the equivalent of ten more banks, nineteen more clothing stores, sixty-eight offices, thirty-five restaurants and cafes, thirty churches, and twenty-six more schoolhouses.

To the individual business, 20,000 new homes will mean the expenditure in building sites of \$15,500,000; for carpenter work, \$15,500,000; for lumber, \$14,000,000; for mill work, \$13,850,000; for plumbing, \$7,720,000; for contracted jobs, \$7,700,000; for brick work, \$4,850,000; for painting, \$4,250,000; for electric fixtures, \$2,430,000; for nails and hardware, \$2,400,000; for roofing, \$2,350,000; for concrete, \$2,330,000; for hardwood floors, \$2,320,000; for plastering, \$1,850,000; for lath and plaster, \$1,230,000; for cellars, \$950,000; and for mantels, \$770,000, making a total in the increase of individual business of \$100,000,000.

The magnificent work which commercial bodies have been doing for California for the past two-score years will be quickened by power development. They can now send new and authentic literature to eastern manufacturers, who realize that in the countries bordering the Pacific dwell three-fourths of the population of the world, offering the greatest of markets for American ware. They can now bear witness to the economies involved in building factories nearer to the Pacific coast; and they can vouch for the perpetual supply of cheap power insured by unfailing water sources. Chambers of Commerce and Boards of Trade can now assure home-seekers that land irrigated by electrical pumping can be continually productive, and therefore secure and profitable.

The members of these commercial bodies are the capitalists, the merchants, the manufacturers, and the agriculturists of their respective districts. These members who are the bone and sinew of many communities have it within their power to speed up the development of hydroelectricity by becoming financial partners in these enterprises, with the knowledge that their investment in hydroelectric construction is increasing the production of electricity, which is the life blood of prosperity.



Delegates at the Salt Lake City convention of the A. I. E. E.

Power Transmission Problems Discussed at Salt Lake City

Engineering and Economic Problems of Long-Distance Power Transmission and Interconnection Receive Particular Attention at the Combined Annual and Pacific Coast Convention A. I. E. E.

June 21 to 24 were important dates for the western members of the American Institute of Electrical Engineers, as for the first time an annual convention of the Institute was held in a western city. Not only was the thirty-seventh annual and the tenth Pacific Coast convention held in a city in the western portion of the country, but, as was to be expected, the Salt Lake City convention was dominated by the western spirit, and, to a large extent, the problems of the economic transmission of large blocks of power over long distances, power-factor control, prevention of harmonics, insulator problems and the effect of corona, which were dealt with in detail, are typical of western power problems.

On the opening day, Tuesday, June 21, Charles R. Mabey, governor of Utah, delivered an address of welcome, and the president, Arthur W. Berresford, gave the annual presidential address. In his address, besides touching on the essentials of research, which must always form the basis of engineering development, he discussed with broad vision the commercial engineering responsibilities which engineers are now realizing they must assume. In considerable detail he outlined his conception of the proper sphere of activities of such bodies as the U. S. Bureau of Standards in order to eliminate misunderstandings and to correlate in an effective way the work of such bodies with that of corporate and university laboratories in the interest of the public.

Long Distance Transmission

The discussion of the papers of the symposium on long-distance transmission by Messrs. Baum, Lewis and Elden, and on the papers dealing with related subjects by Messrs. Whitehead, Skinner, Peters Lee, and others, brought out the relationship between the engineering and economic problems in the transmission of electric energy in large quantities in order to meet the requirements of future service. The subject of line regulation was considered of greatest importance. That there is sufficient information at hand, as the result of the study of line insulation and related problems, to justify confidence in handling many problems of inductive interfer-

ence and to achieve line reliability, was the consensus of the opinion of those who discussed the papers dealing with these subjects.

F. G. Baum, consulting electrical engineer of the Pacific Gas & Electric Company, added to his many original contributions to the Institute during the past twenty years an exhaustive treatise on voltage regulation, and insulation of high voltage transmission lines. This paper was one of three constituting a symposium on long-distance transmission systems. Another by W. W. Lewis of the General Electric Company dealt with transmission line tests, and the third by L. L. Eldren of the Edison Electric Illuminating Company of Boston took up the operation of interconnected systems. The discussion of these papers was largely on details of theoretical fundamentals presented, and emphasized the need of constant voltage transmission and flat regulation on long lines, together with accurate information on the operating characteristics of grounded and isolated circuits.

The papers by Messrs. L. E. Imlay of the super-power survey, Raymond Bailey, Philadelphia Electric Company, and by E. H. Fritz of the Pittsburgh High-Voltage Insulator Company and G. I. Gilchrist of the Westinghouse Electric & Manufacturing Company, dealt with transmission from the standpoint of the eastern super-power survey, connections between generating stations and the design and production of suspension insulators.

Water Power Development

The advances in the design of water wheels and water wheel settings were discussed in an able paper presented by W. M. White, of the Allis-Chalmers Manufacturing Company. He pointed out that the present tendency in the development of hydroelectric projects is to develop each site completely and to use the largest units that will permit of the maximum economic use of the power available. Recent advances in design have resulted in increased efficiency and in better regulation, as well as in greater reliability. These are factors that assure the utilization of our water power resources to the best advantage.

The paper dealing with the Niagara Falls development, by J. L. Harper and J. A. Johnson of Niagara Falls, and the portion of the paper by W. M. White dealing with typical water wheel installations such as those at Pit River, Caribou and Niagara Falls, proved to be of great interest to engineers.

Thursday's session was devoted to the discussion of papers presented by F. W. Peek on Voltage and Current Harmonics Caused by Corona; by E. E. F. Creighton of the General Electric Company and F. L. Hunt of the Turners Falls Power Company on A Solution of the Porcelain Insulator Problem; on Transformers for Interconnected High-Voltage Systems or for Feeding Synchronous Condensers from Tertiary Winding, by J. F. Peters and M. E. Skinner, both of the Westinghouse Electric & Manufacturing Company, and the paper by J. B. Whitehead and F. W. Lee, both of Johns Hopkins University. The discussion of these papers was presented from three angles and was conducted under the joint direction of E. B. Meyer and F. G. Baum; first, line insulation; second, engineering and operating problems, and, third, economics.

Electrical Engineering Practice in Italy

On Friday morning Guido Semenza, local honorary secretary of the A. I. E. E. for Italy, and consulting engineer of Milan, gave a most interesting and instructive address on some of the outstanding developments in his country. Among other things he pointed out that there are already in Italy interconnections between the northern and southern groups of hydroelectric power plants, and that this interconnection was brought about without pressure from the government. He is of the opinion that private control of power resources of the country is best. One of the interesting problems is the supplying of power to Sicily; although the island is separated from the mainland by a strait but two and a half miles wide, the swift currents preclude the laying of submarine cables. Serious consideration is being given to the construction of a tunnel in which to run power lines.

Entertainment

H. T. Plumb, engineer of the General Electric Company, as chairman of an able convention committee, showed marked ability in conceiving and executing an entertainment program especially appropriate to the engineering interests of the delegates, as well as acquainting them with the majestic setting of the convention city and its place in the industrial empire of the West. Features of this program were special excursions by automobiles and by train to the substations of the Utah Power & Light Company, over drives in the Wasatch Mountains, and to the mines and milling plants of the Utah Copper Company, which operates the largest surface copper mine in the world. Visiting ladies were elaborately entertained. In addition to several automobile tours there were dancing and musicals in the Utah Hotel and luncheons at prominent clubs. An inspection of the renowned Latter Day Saints Temple and grounds was followed by an impressive

organ recital in the tabernacle that was particularly arranged for the convention delegates.

The Salt Lake City convention will long be remembered as one of the most pleasant and profitable of the A. I. E. E. annual conventions, and as a real factor in bringing about a better understanding of the particular problems of the West by those Eastern delegates who were so fortunate as to be in the convention city during the third week in June.

ENGINEERS OF YESTERDAY

(Series Compiled by A. L. Jordan)

24. AMPERE

Why was Ampere called the "father of electromagnetism"?



AMPERE [1775-1836]

Andre Marie Ampere displayed mathematical powers at an early age. His father was guillotined during the French Revolution and the son passed into a long continued state of mental dejection. After his recovery, at the age of 24, he was married, but the early death of his wife added to his previous sorrow. In spite of this he continued his electrical experiments, became a member of the French Institute and was for twenty years connected with the Polytechnic School in Paris.

His work in electromagnetism included the magnetization of steel needles by the electric current, showing the attraction or repulsion of parallel wires carrying current, and a theory of electromagnetism covering the subject from the behavior of a small steel magnet on the one hand to the magnetism of the earth on the other. His experiment where a helix is used as a compass is thus described by Arago: "For several weeks physicists crowded (his) humble study * * * to witness with amazement a conducting wire of platinum take a definite direction through the action of the terrestrial globe. What would Newton, * * * Franklin and Coulomb have said if it had been announced to them that a day would come when, in default of a magnetic needle, navigators would be able to guide their vessels by * * * electrical currents, * * * electrified wires?"

Improved Lighting of the Hotel Lobby a Commercial Asset

Details of the Successful Lighting Installation in the Lobby of the Oregon Hotel of Portland Which Has Solved Illumination Problems Common to All Hotels

BY F. H. MURPHY

Illuminating Engineer, Portland Railway Light & Power Co.

The illumination of a first-class hotel lobby should be restful, cheerful and inviting. It can be and should be made to assist in affording that feeling of hospitality and comfort to the guests that will make them not only want to come again, but also to recommend the place to their friends. It was with this idea in mind that Mr. A. H. Meyers, manager of the Oregon Hotel, recently decided to have the lobby lighting thoroughly revised.

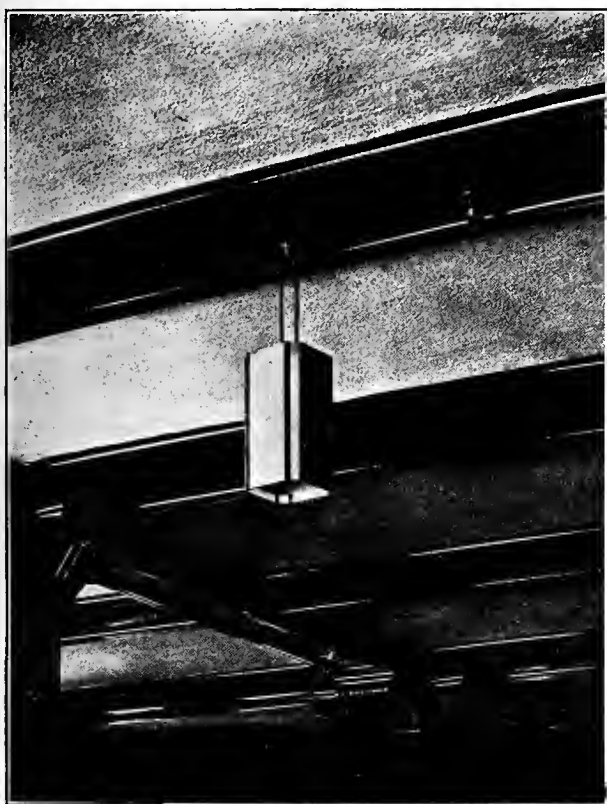
The hotel lobby is 50 feet wide by 90 feet long, with a ceiling height of 14 feet. Rows of supporting columns divide the room into rectangular bays approximately 12 by 18 feet. These columns support two longitudinal beams, while cross beams are placed on 6-foot centers, thus cutting the ceiling into panels approximately 5 by 15 feet. The beams have a depth of about 18 inches, while the upper walls have a plastered surface beneath the beams for a distance of about three feet. Below the plaster a wooden wainscoting extends to the floor, a depth of 9 feet 6 inches. The columns, beams and wainscoting are finished in a very dark glossy color and the upper walls and ceiling panels are finished in dull tans and yellows. In the rear of the room is a large tiled fireplace, above which hangs an oil painting. Along

one side of the room are located the offices of the hotel. At the opposite end of the room from the fireplace is the main entrance, with large plate glass windows facing on the principal street. The effect, upon entering, is that of a long room 30 feet wide by 90 feet long and 14 feet high, at the farther end of which is the fireplace.

Lighting Possibilities of Lobby

This interior presented great possibilities, if properly illuminated. The lighting equipment then in use was unattractive and irritating because of exposed light sources that were re-directed in narrow beams about the room in such a manner that they did not illuminate the room or its furnishings satisfactorily but produced a glare in the eyes of the occupants.

In properly lighting a room, the principal objects to be obtained were to suffuse the interior with light of an intensity of about four or five foot-candles upon the reading plane, to preserve a view of the interior and to enhance the decorative value which already existed within the room. Such an effect could be produced in this particular room only by a lighting unit which would avoid glare and throw a great quantity of light downward.



Type of unit chosen to improve lighting conditions in the hotel lobby. The lantern is 22 inches high with side panels 5 inches wide, and is both unobtrusive and effective.



Night photograph taken of corner of lobby showing fireplace and painting. These two features of the lobby have doubled in value since the installation of proper lighting.

The center of interest of the room was naturally the handsome fireplace which occupied the center section at the rear. This was very artistically designed and it was desired to emphasize this feature of the lobby particularly, so as to introduce a home-like atmosphere. However, it would be very easy to rob the fireplace of all its charm and effectiveness if ornate or even beautiful fixtures were installed that

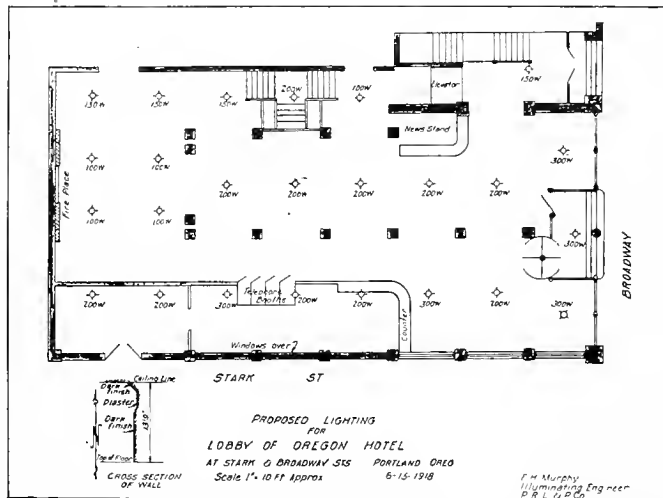


Diagram showing spacing of units in lobby of the Oregon Hotel after rearrangement.

stood out or were conspicuous, either for their beauty or uniqueness, to such an extent that attention would be drawn to the fixtures rather than to the fireplace setting.

Lantern Style for Light Unit

A careful consideration of the size of the room, its color and the architectural style of its members resulted in the development of a lantern as a light holder. This light holder is neither obtrusive nor conspicuous in any way, but is pleasing and in entire harmony with the interior architecture of the room. Very little of the light escapes through the sides, in this way avoiding the injection into the room of an object with too bright a surface, while the very thinly transparent, highly diffusing bottom of the lantern permits the majority of the light to be thrown downward, thus filling the room with light and at the same time concealing the lamp itself. The entire installation as carried out presents an excellent example of an instance in which illumination, rather than an elaborate, over-lighted fixture, is used as the decorative agent.

In the original installation, two branching chandeliers were suspended directly in front of the painting above the fireplace mantel, making it impossible to view this painting satisfactorily by day or by night. The new installation planned to change the ceiling outlets over the area in front of the fireplace, so that the lighting fixtures would in no way interfere with a view of the painting; otherwise, the ceiling outlets were unchanged.

The lantern unit used in this installation is a single light fixture with four sides and mitered corners. The side panels are approximately 5 by 22

inches, and the mitered corners 1 by 22 inches. The sides and mitered corner panels are of dense white opal glass supported in a black iron frame. About one inch from the bottom of the lantern, a bottom plate of very light diffusing glass is placed so as to completely conceal the lamp and filament. The fixture unit is designed of sufficient size to take either a 200 or a 300-watt lamp, the sides being of sufficient area and density to reduce the light intensity to a comfortable value, while the bottom plates are of glass selected with the idea of reducing the absorption to a minimum as well as maintaining a perfect diffusion of the light. The general design is very clearly shown in the accompanying cut of an individual unit. The result is a lighting fixture that is neither obtrusive nor conspicuous in any way, but is pleasing and in entire harmony with the interior architecture of the room.

Effect of the New Lighting

The effect produced upon coming into the lobby is that of entering an attractive, well-lighted place, looking down a long room with a sense of comfort and ease, because of the lack of glaring surfaces, and viewing at the farther end an inviting and home-like scene, the center of which is a large fireplace. The tile front of the fireplace features an embossed panorama of Mt. Hood and vicinity in colors. Above the mantel is a handsome painting of Lake Macdonald, with its wonderful coloring. In front of the fireplace is a large rug, and arranged along either side of the rug leading up to the fireplace are a number of large, comfortable chairs. Near the front, and at one side of the fireplace, is a massive wrought iron floor lamp with a parchment shade. The light escaping from the sides of this shade is only sufficient to brighten it and bring out the colors, while most of the light is thrown downward where it is useful in producing illumination of such an intensity that fine needlework or sewing may be carried on with ease and comfort, if desired, while the general illumination here and throughout the entire lobby is of sufficiently high intensity to give a comfortable light for all general purposes.

The ceiling fixtures in front of the fireplace are so arranged as to provide an unobstructed view of the picture above the mantel, and the whole effect of the lighting is so comfortable and inviting as to draw patronage and make this one of the very attractive features of this hotel. So successfully is glare eliminated from this installation, that it is possible from the other side of the street to look underneath and between the lighting fixtures at night and see distinctly both the fireplace and the painting.

The installation typifies the progressiveness of the management in marshaling the forces of light to assist them in providing for the comfort of their patrons.

An investigation made recently after the installation had become fairly normalized, showed an intensity of 4.5 foot-candles on a reading plane with an energy consumption of one watt per square foot.

Selecting Illumination for the Industrial Plant

A Lighting Expert Discusses Basic Principles of Factory Illumination with Details of a Successful Installation which Improved Operating Conditions in a Wood Working Shop

BY J. J. McLAUGHLIN

Illuminating Engineer, Westinghouse Lamp Company

While the realization of the importance of good illumination for industrial work is growing, there still are some factories inadequately lighted, according to up-to-date lighting practice for such buildings. This is probably due to the fact that artificial light-

the illumination uniform and of an adequate intensity to permit manufacturing operations to be carried on efficiently. Such a condition as inadequate illumination, both natural and artificial, existed in the center bays of the shop shown in Fig. 1 before the new lighting was installed.



Fig. 1.—Night view of the new installation. Note the absence of deep shadows and the pull switch controlling the illumination of each bay, giving a flexibility to the installation.

ing is still considered solely as an expense with no returns. This may be true when compared with natural lighting obtained through windows and skylight at the expense only of keeping them cleaned.

However, even though nature supplies us with practically free light, yet there are periods when natural lighting fails to provide sufficient illumination to make it possible to continue working in an efficient manner. This condition, by shortening the work-day, calls for some other means to provide the necessary illumination to continue the work. This is only one factor, of many, in favor of good artificial illumination.

Need of Artificial Lighting

Although in the modernly constructed factory building of today the window area comprises a large percentage of the area of the walls, still if the building is from sixty to a hundred feet wide and the ceiling is only from ten to twelve feet high, the daylight intensity falls off very rapidly in the center bays. The only sections receiving good natural light are those near and adjacent to the windows. This applies more to the older types of factory buildings in which the window areas are very much limited and the ceilings are low.

Under these conditions it is necessary to provide the proper artificial lighting in order to make

Old Conditions of Shop

First of all the room consisted of 4 bays, each 20 feet wide, and the two center bays did not receive a sufficient amount of daylight to carry on the work in an efficient manner. Deep shadows were formed by the object worked on if the machine happened to be a little nearer to the windows on one side than to the others.

Second, the old installation (consisting of one 200-watt Mazda C lamp, equipped with a bowl-dome reflector in the center of each 20 by 20-ft. bay) did not provide sufficient artificial illumination, due to the fact that the units were spaced too far apart for the height of ceiling and type of reflector, and the 200-watt lamp was too small to illuminate the area of one bay to the proper intensity. The intensity delivered on the working plane was 2 to 3 foot-candles between the units and 5 to 6 foot-candles directly underneath them. Thus the illumination was non-uniform, creating deep shadows, especially when the



Fig. 2.—Daylight view in wood-working shop after completion of new system of lighting. The new installation consisted of replacing 1—200-watt lamp with 4—150-watt lamps in each bay.

workman was in a position that brought him directly between the light and the work.

The New Installation

To eliminate these conditions, a new installation was made in which the lighting units were installed on closer spacings which gave a much more uniform illumination over the working plane than was ob-

tained from the old lighting system. The new arrangement consisted of four 150-watt Mazda C lamps, with R.L.M. reflectors in each bay of 20 by 20 feet.

As a result of the change from the old to the new the intensity of illumination was increased approximately four times the average amount delivered



Type of R.L.M. reflector designed for use in large rooms, as in industrial plants especially where there are low ceilings. This reflector was used in the installation shown in Fig. 2.

by the former installation, at an increase of only one-half watt to one and one-half watts per square foot. To make the use of the installation flexible, as far as good lighting practice will permit, each of the four units in each bay is controlled by a ceiling pull switch which can be seen in Fig. 1. By this method of control, the system can be used independently in sections as the occasion may require. For example, in the center bays where the daylight may be low at times, the units in such sections can be used independently of those in the side bays next to the windows where the daylight may be adequate.

Thus by having a lighting system installed in the proper manner the illumination obtained will increase very much more than the watts per square foot, giving results that will show in the quality and quantity of the work produced. The R.L.M. reflector used in the new installation is one of the more recent types of industrial lighting reflectors brought out in the past year or so. This reflector is shown in Fig. 3. It is made of sheet steel surfaced with three coats of enamel; the first is a binding coat and the next two coats are white porcelain enamel for the interior or reflecting surface, and of a dark green porcelain for the exterior. They are used for lighting large factory rooms, etc., especially where the ceilings are low.

While the R.L.M. reflector gives a wide distribution of light, yet the cut-off of light is at such an angle (17 degrees) below the horizontal line through the light center of lamp and reflector, that the bright light source of a Mazda C lamp is shaded from the normal line of vision. Also by the use of the bowl enameled Mazda C lamp the possibility of glare is removed.

It is found that proper lighting reduces accidents, especially with good illumination from an

overhead system that lights the entire shop, including aisle ways and spaces where material is placed on the floor. The latter may cause workmen to trip over objects if the shop is not lighted to the proper intensity.

With up-to-date lighting greater accuracy in workmanship is obtainable, thus decreasing spoilage of product, and at the same time the labor cost increasing production.

The accuracy with which an object is seen depends to a large extent upon the amount and direction of light. Thus, if the illumination provided is too low for the work in hand, and comes from the wrong direction, it will be necessary for the workman to expend more effort with his eyes in order to see the work properly. Performing such work under poor light continually for a long period may result seriously to the employer in the low quality and quantity of work; also to the workman himself by affecting his sight, a great loss to anyone.

However, by providing the proper amount of illumination required, the work can be seen better and the workman can work efficiently if the illumination is increased somewhat above the normal intensity required. These actual results have been obtained from the new installation in Fig. 1.

Contented Workmen

Good lighting of workshops results in better working conditions, and reflects on the living conditions of the workmen by the fact that it creates greater contentment. It also makes for better order, cleanliness and neatness in a plant.

THE PLANT MANAGER'S VIEWPOINT ON INDUSTRIAL LIGHTING

An interesting comment on industrial lighting is contained in a recent statement by Mr. R. S. Springer, vice-president of the Holt Manufacturing Company, and manager of the company's Stockton plant:

"The consideration of first cost probably keeps many plant engineers from doing what they know should be done in the matter of proper illumination. The advantages accruing from window glass walls, white painted ceilings and proper distribution of artificial light are generally recognized.

"We previously used the common shop lighting plan of the small incandescent bulb suspended from a cord over each machine. About four years ago, under the direction of competent illuminating engineers, we installed in our machine shop the first unit of our present lighting system. This system has been extended to cover the foundry, forge shop and assembling departments. As a result, we have reduced our labor turnover, because good light means better surroundings, higher morale and contented workmen. We have decreased our spoilage, even though we now require greater accuracy in our work. We know we have materially increased our production, especially on our night shifts, as a direct result of our improved factory lighting.

"We feel that the results and benefits to both the men and to the company have justified the investment and maintenance of our modern lighting equipment."

As a further indication of the importance that Mr. Springer attaches to good factory lighting, the plant's staff includes a special window and lighting unit cleaner, whose duty it is to see that the lighting units are properly maintained and that the windows are washed as frequently as is practical.



There are over twenty-five million electric lamps used in the electric signs of this country; they tell the electrical and industrial story to the great public which throngs the street at night after the day's work is done.

Electricity Modernizes the Signboard

The Electric Sign as an Advertising Medium Comes Into Importance as the Modern Development of One of the Earliest Recognized Merchandising Devices

BY TRACY W. SIMPSON
Federal Electric Company

THOUSANDS of small merchants use the electric sign as their only form of advertising, and each year the electric sign is taking a bigger place in the advertising appropriation of larger ones. There is good reason for this, and the electrical fraternity should be familiar with the theory underlying this useful electrical device.

Since earliest times the extending sign board has been a wonderfully efficient form of advertising. Taverns were designated by a projecting board in the shape of a bush, apothecaries by the mortar and pestle, etc. Since the object was to attract the public, they were often of an elaborate character and of artistic merit and mounted on supports of hand-

wrought iron designs. The great artist Holbein designed many of these early signs, and their cost was sometimes as high as \$10,000 each in modern money equivalents.

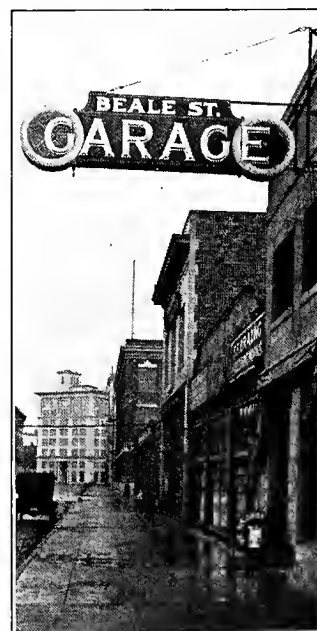
In this day, the extending sign board is even more valuable to a merchant. People have the out-of-door habit more than ever before. Street circulation is large and of a class to which the merchant caters. But the old-fashioned extending sign board cannot be used nowadays on account of the changed custom regarding the rights

of property owners to the space above the sidewalk. The modern common law gives this space to the municipality and most municipalities grant what amounts to an easement or franchise on this space to the property owner, provided he will erect only such a sign as conforms to city ordinances. The consideration or payment to the city for this easement consists in the street illumination provided by the sign. This explains why modern cities refuse permission for unilluminated sign boards of olden-day style, yet will grant permission for an electric sign.

The nature of the electric sign is therefore identical with the extending sign board of years ago, but modernized to conform to the modern common law by electrical illumination. From the standpoint of the merchant, this is a happy circumstance as the electric lettering reaches night circulation as well as day, becoming doubly valuable. From the standpoint of the electrical fraternity it is likewise fortunate, since there are upwards of twenty-five million lamp sockets in the country's electric signs, with correspondingly great benefit to all branches of the electrical industry.



Electric signs illuminate the street



A modernized sign board

Study Course

For the Contractor-Dealer, and the Business Man in the
Small Industrial Plant

University Accounting Course — IX

Double-Entry Theory — Summary of Operations Accounts

BY PAUL B. KELLY

The manner in which numerous income and expense accounts are evolved from the net worth element in the accounting equation was explained and illustrated in the last lesson. This lesson deals exclusively with the practical application of that theory to the operation of the Standard Accounting System. We now begin a study of the income and expense accounts actually used. If Lesson 8 was thoroughly mastered, this lesson will be easy to understand. It will be necessary, however, to re-read this lesson often enough to remember every detail, because a ready knowledge of the nature of each account used is essential in order to make the proper entries to the right accounts quickly and accurately.

All the income and expense accounts are, of course, exhibited in the summary of operations statement. Carefully read through this statement in order to get a comprehensive view of the whole system of net worth accounts before we begin a study of the purpose and use of each account there shown.

SUMMARY OF OPERATIONS
of the
ACME ELECTRIC CO.
For year 1919.

OUTGO		INCOME	
Cash Discount Allowed	56.60	Sales Billed	79,417.20
Cost of Sales Billed	62,225.85	Cash Discount Earned	968.83
Frt't, Exp. & Carting	7.90		
(Overhead)			
GENERAL EXPENSES			
Salaries	7,280.00		
Rent	480.00		
Light, Heat, & Power	104.79		
Stationery, & Off. Supplies	68.65		
Telegraph & Telephone	118.94		
Postage	46.30		
Advertising	643.92		
Taxes	193.67		
Insurance	224.40		
Association Expense	336.00		
Automobile Expense	544.32		
Other General Expenses	243.19		
CONTINGENCY RESERVES & DEF'NS			
Allowance—Loss on Accts Rec.	160.00		
Allowance—Dep. on Fur. & App.	72.00		
Allowance—Dep. on Autos	480.00		
Allowance—Dep. on Tools	60.00		
Allowance—Dep. on Adm.	300.00		
PROPRIETORSHIP ACCOUNTS			
Dividends Distributed 5000			
Balance to Surplus 1800	6,800.00		
Total Profit in 1919	6,800.00		
TOTAL	90,385.00	TOTAL	90,385.00

Income Accounts

The Standard Accounting System provides three accounts for classifying income from different sources. Two of these accounts are exhibited in the statement shown. The Acme Electric Co. had no occasion to use the third. Income accounts should normally show a credit balance.

INCOME ACCOUNTS

- | | |
|-------------------------|-----|
| 1. Sales Billed | Cr. |
| 2. Cash Discount Earned | Cr. |
| 3. Commissions Received | Cr. |

Sales Billed Account

This account is credited with all sales of merchandise and labor. The data for making the credits to this account are obtained from the cash sales tags and the customer's bills. This account is debited when sales are returned and when customers are allowed rebates or other deductions from the billed amount. The balance of this account represents the net amount of sales for the period.

In describing the use of the accounts in this lesson, only the side of the double entry that affects the account being discussed will be given. Any debit or credit to one account must result in a credit or a debit to another. For the sake of brevity only one side of the entry that would be made is mentioned. It will greatly aid in learning this material if you make up a schedule of all the complete entries that you can think of that affect the account under discussion. For example, a schedule of entries for the sales billed account is like this:—

DEBIT	CREDIT	DEBIT	CREDIT
Sales Billed	Accts Rec.	Accts Rec.	Sales Billed
" "	Cash	Cash	" "

Cash Discount Earned

Many business houses from whom the contractor-dealer purchases merchandise or services allow him to deduct a certain percentage from the amount of their bills in consideration of a prompt cash settlement. The amount deducted from bills in this way is called Cash Discount Earned. It is regarded as income to the buyer and not as a deduction from the cost of his goods. It is an inducement to the buyer to part with his cash before the bill is due. It is considered to be interest which the seller pays the buyer in order to secure the use of the money involved before he has the right to demand it.

The amount of cash discount earned is credited to this account. As an illustration let us assume that you purchased \$100 worth of merchandise from the P. S. E. Co. You received an invoice for \$100 on which it was stated that if you paid the bill by Jan. 10th you would be allowed to deduct 2% from the bill. You take advantage of the offer by sending a check on Jan. 9th for \$98. The payment of the bill is recorded by this entry:

Dr. Liabilities \$100 Cr. Cash \$98
 Cr. Cash Discount Earned \$ 2

Before this entry is made the accounts affected are like this:

<div>LIABILITIES</div> <div><div>PSR</div><div>100</div></div>	<div>CASH</div> <div><div>BS1</div><div>500</div></div>	<div>CASH DISCOUNT EARNED</div> <div><div>PSR</div><div>2</div></div>
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After the entry is made the accounts are like this:

<div>LIABILITIES</div> <div><div>PSR</div><div>100</div></div>	<div>CASH</div> <div><div>BS1</div><div>500</div><div>PSR</div><div>98</div></div>	<div>CASH DISCOUNT EARNED</div> <div><div>PSR</div><div>2</div></div>
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Commissions Received

This account is credited with the amount of commissions received from manufacturers and jobbers as compensation for negotiating sales which are billed by the manufacturer or jobber directly to the customer. This account is one which many contractor dealers will have no occasion to use.

Expense Accounts

The expense accounts far outnumber the income accounts. The reason for this is that income comes into the business through only a few channels; while on the other hand, many different classes of expense provide the outgo. It is necessary to have numerous expense accounts in order to get the detailed classified information needed to discover and stop leaks.

Cost of Sales Billed Account —

This is a very important and much used account. Its function is probably fairly well understood already because it was used in the last lesson.

This account is debited with the cost of all merchandise sold. Whenever an entry is made recording a sale, a parallel entry is made to debit the Cost of Sales Billed Account and to credit the Merchandise Account with the cost price of the merchandise relinquished. If this point is not clear to you, it indicates that you should review Lesson 8. The cost data necessary to make this entry is recorded, as you will recall from lessons 2 and 3, on the cash sales tags and the customers' bills.

To this account is also debited the cost of the merchandise, labor, and direct job expenses expended on construction jobs that have been billed. The necessary data is gathered on the job envelope and is recorded on the customer's bill.

It is essential that you understand how this account operates, for much of the accounting work centers around it. Study this illustration well.

Assume that you have just completed a time and material job and have billed the customer for \$150. The duplicate of the customer's bill shows that the total cost of the job is \$100, of which \$60 is merchandise cost, \$28 labor cost, and \$2 direct job expense. Two distinct double-entries are necessary to record this data in the accounts.

<div>DEBIT</div>	<div>CREDIT</div>
1. Accts Rec. \$150	1. Sales Billed \$150
2. Cost of Sales \$100	2. Merchandise Acct \$ 60
	Labor Unbilled Acct \$ 28
	Direct Job Expense Unbilled \$ 2

Assume that before the entry the accounts affected were—

<div>Accts Rec</div> <div><div>500</div><div>150</div></div>	<div>Sales</div> <div><div>BS1</div><div>150</div></div>	<div>Cost of Sales</div> <div><div>BS1</div><div>425</div><div>PSR</div><div>100</div></div>	<div>Merch</div> <div><div>BS1</div><div>100</div></div>	<div>Labor Unbilled</div> <div><div>BS1</div><div>28</div></div>	<div>Job Expense Unbilled</div> <div><div>PSR</div><div>2</div></div>
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After the entry the accounts would reflect the change like this:

<div>Accts Rec</div> <div><div>500</div><div>150</div></div>	<div>Sales</div> <div><div>BS1</div><div>150</div></div>	<div>Cost of Sales</div> <div><div>BS1</div><div>425</div><div>PSR</div><div>100</div></div>	<div>Merch</div> <div><div>BS1</div><div>100</div></div>	<div>Labor Unbilled</div> <div><div>BS1</div><div>28</div></div>	<div>Job Expense Unbilled</div> <div><div>PSR</div><div>2</div></div>
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Cash Discount Allowed Account —

This account is the opposite of the income account called cash discount earned. To this account are debited all discounts which customers are allowed to deduct from their bills as an inducement to them to pay them promptly. Assume, for purposes of illustration, that you send to one of your customers a bill for \$100 subject to a discount of 2% for cash in 30 days. If your customer pays the bill within 30 days he may settle in full by tendering you a check for \$98. The payment of the bill would be reflected in the accounts by the following entry:

<div>CREDIT</div>	<div>DEBIT</div>
Accts Receivable \$100	Cash \$98
	Cash Discount Allowed \$ 2

Commissions Allowed Account —

This expense account is just the opposite of the income account called Commissions Received. Commissions paid to agents or others for securing orders are debited to this account. Many contractor-dealers will not have occasion to use this account.

Freight, Express, and Carting (Unabsorbed) —

Entries to this account will not occur frequently. Charges for freight, express, or carting on material coming into the store are a part of the cost of such merchandise, and should be debited to the merchandise account. Carting charges for transporting the material from the store to the job where it is used should be debited to the direct job expense account. This account should be debited only with other miscellaneous freight, express, and carting charges which are not absorbed by the merchandise or the direct job expense accounts.

Salaries Account —

To this account is debited all payments for salaries or wages of employes who are not directly productive. Debit this account with the salaries of such people as superintendents, salesmen, stock-room boys, bookkeepers, stenographers, etc.

Miscellaneous Self-Explanatory Accounts —

All of the following accounts are self-explanatory because of their titles. These accounts require no explanation because common sense will be sufficient guide in making entries to them.

- 1. Rent
- 2. Light, Heat, and Power
- 3. Stationery and Office Supplies
- 4. Traveling and Entertaining
- 5. Telegraph and Telephone
- 6. Postage
- 7. Advertising
- 8. Association Expenses
- 9. Automobile Expenses.

Taxes and Insurance —

In Lesson 7, it was explained that when insurance is purchased a deferred asset account known as Insurance Premium Advances is debited. Likewise, when taxes are paid in advance, an account called Taxes Paid in Advance is debited. It was pointed

out that the passage of time consumes the value of these deferred assets. Periodically an entry must be made in the accounts recognizing this fact. In practice, this is done at the end of each month by a credit entry which reduces the asset values in these accounts with the portion of their values that has been consumed by the elapse of the month then ending. The corresponding debit is made either to the insurance account or to the taxes account. These are expense accounts and their balances represent the portions of such charges which apply to the current period. The expense is thus prorated to each month and an accurate summary of operations is obtained. Here is an example of how these accounts are operated.

INSURANCE PREMIUM ADVANCES				INSURANCE			
Jan 1 Bal	120			Jan 31	Mon. Chge	10	
Jan 31	Expired	10		Feb 28	" "	10	
Feb 28	"	10		Mar 31	" "	10	
Mar 31	"	10					

Warehouse Upkeep Account —

Debit this account with all payments for packing materials such as excelsior, twine, wrapping paper and cartons used in packing or boxing. It is also debited with the cost of repairing and renewing short-lived and inexpensive tools used in the warehouse and stock-room.

Interest Account —

Debit this account with all amounts paid by the contractor-dealer for the use of money.

Other General Expenses Account —

This account is debited with all incidental and miscellaneous expenses not provided for by the other expense accounts described. Such charges as contributions, donations, fees for builder's reports, and registration fees are debited to this account. Care should be exercised that every charge about which there is a little doubt, is not dumped into this account.

Contingency Reserves and Depreciations —

These accounts are expense accounts and like all other expense accounts they represent decreases in net worth. The decreases in net worth which are recorded by these accounts are due to the decline in the value of certain assets. In Lesson 7, it was explained that some of the assets, such as automobiles, decline in value with the passage of time and with use. It was pointed out that depreciation might be recorded in the asset and the net worth account in this manner:

AUTOS				NET WORTH			
Dr.		Cr.		Dr.		Cr.	
Cost	1700			Depr'n	27.73	Net worth	1700
		Depr'n	27.73				

Instead, however, the entry is made to the following accounts. The same effect on the accounting equation results, but the second method gives additional information.

RESERVE FOR DEPR'N ON AUTOS				ALLOWANCE FOR DEPR'N ON AUTOS			
Dr.		Cr.		Dr.		Cr.	
Depr'n	27.73			Mon. Chge	27.73		

The reserve for depreciation on autos is shown in the balance sheet on the right side and is intended to represent a deduction from value of the autos shown on the other side at cost.

The allowance for depreciation on autos is an expense account. Like other expense accounts, it is closed into the P & L Account at the end of the year.

Allowance for Depreciation on Furniture and Office Appliances —

The value of all furniture and office appliances should be written off the books in a similar way during a period of not more than ten years. Each month 1/12 of the estimated annual depreciation on these assets should be debited to allowance for depreciation on furniture and office appliances and credited to reserve for depreciation on furniture and office appliances.

Allowance for Depreciation on Tools —

The value of tools and the value of autos are depreciated at the same rate and in exactly the same way. At least one-third of the value of tools should be written off each year. This means that each month an entry of this sort will be made:

DEBIT		CREDIT	
1/36 of the cost value of tools	to	1/36 of the cost value of tools	from
Allowance for Deprec'n on Tools		Reserve for Deprec'n on Tools	

Allowance for Depreciation on Merchandise —

In any concern, a certain amount of the merchandise stock is bound to become obsolete and worthless. The contractor-dealer, like every other business man, strives to prevent this, but nevertheless it occurs. Once in a while, the contractor-dealer goes through his stock and picks out the obsolete items which he feels he will never be able to sell, and which are occupying space that is in demand. He throws these items away, or, at best, sells them as junk. A proportionate part of the annual loss due to obsolete stock should be charged to each period. Each month, therefore, an entry is made debiting 1/12 of the estimated annual loss due to this cause to Allowance for Depreciation on Merchandise, and crediting the same amount to Reserve for Depreciation on Merchandise.

When the obsolete items are discarded, an entry should then be made debiting Reserve for Depreciation on Merchandise and crediting the Merchandise Account.

Allowance for Loss on Notes and Accounts Receivable —

The same principle that is involved in the previous account is involved in this one. No matter how careful the contractor-dealer tries to be in extending credit, he is sure to suffer a certain amount of loss due to the fact that some of his customers fail to pay their bills. At rather long intervals, he thumbs through the Accounts Receivable Ledger and eliminates a number of the accounts which he considers as worthless, and for which it is useless to send out further bills. This procedure would result in a sudden drop in the Accounts Receivable Account, and an unusual debit to the Net Worth Account in the month in which it happened to take place. The monthly Summary of Operations would not accurately reflect the trend of the business.

The proper procedure is as follows. This is important. Get it.

The contractor-dealer, on the basis of past experience, should estimate his annual loss due to this cause. He should then debit 1/12 of this loss each month to Allowance for Loss on Notes and Accounts Receivable, and credit it to Reserve for Doubtful Notes and Accounts Receivable.

When the dealer definitely decides that an account is worthless, he may write it off by crediting the amount involved to the Accounts Receivable Account and by debiting it to the Reserve for Doubtful Notes and Accounts Receivable. This procedure is designed to spread the loss from this source evenly to each month.

Summary

In an earlier lesson it was said that when you could state the proper debit and credit for any transaction, you could consider yourself an accountant. In order to be able to make the proper debit and credit you must know every detail of this lesson. Read it and re-read it.

You cannot consider that you know this lesson until you can tell from memory what transactions result in debits and what transactions result in credits to each account exhibited in the Summary of Operations.

Using the Store as a Business Builder

How to Attract Customers through the Carefully Planned Arrangement of Window and Store is Demonstrated by the Lantz Electric Company of Long Beach, California

Most sales begin in the window, and in their new store in Long Beach, California, the Lantz Electric Company have made skilful provision for this fact. Movement and light, two of the surest means of attracting the attention of the human eye, are freely used. Each of the show windows is lighted by twenty-six 100-watt mazdas, mounted in reflectors of a special original design. A flasher permits these to be manipulated in such a way that any desired color, or combination of colors can be obtained. A continuous change of colors is found to be a most effective method of attracting the attention of the passer-by.

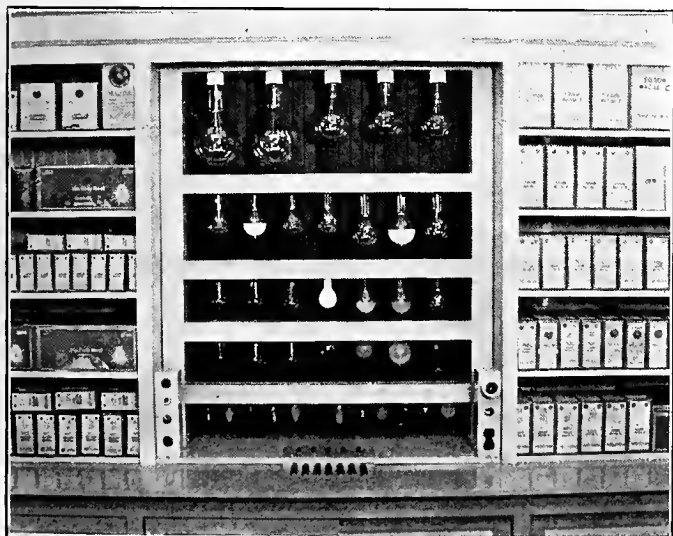
Another form of movement used is the window demonstration. The left show window is built on a level with the floor to accommodate the larger labor-saving devices, and can be used as a model laundry. Everyone stops to watch these washing machine demonstrations—from the housewife who wants to see if the clothes come out clean and with a full quota of buttons, to the small boy who has a vague

ecstatic hope that the lady demonstrator may fall into the soapsuds.

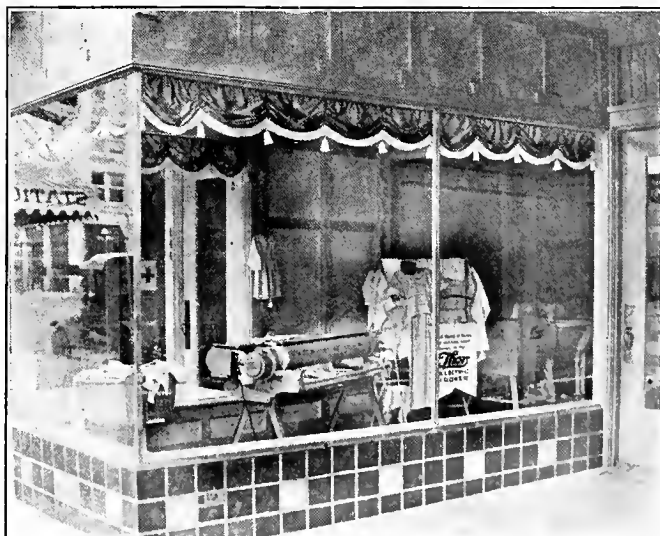
The show window on the opposite side is raised, and is devoted to the display of the smaller appliances. Careful color schemes, tasteful arrangement, and artistic lighting made this window fully as attractive as the other. As the store is situated in the business center of the town, it reaps the fullest advantage from its special window displays.

Lighting is a feature of the interior, as well as of the windows. The wall cases for the heating appliances are lighted with subdued colored lamps, giving an exceedingly pleasing effect. In the center of the store is a home-like arrangement of chairs, rugs, and tea wagon, which is irresistible to the woman customer.

The laundry equipment and the vacuum cleaners, contrary to the usual custom, are placed at the front of the store, where they immediately attract the attention of the housewife. It has been found that the average woman is more interested in the



The lamp rack is built into the wall case, and each lamp is operated by an individual switch.



The laundry display is placed at the front of the store, and one of the windows at floor level accommodates washing machine demonstrations.



Special coloring and lighting make this store interior singularly attractive to women shoppers, while the radio department in the rear is an unflinching magnet for the small boys of the community.

large labor-saving devices than in any of the smaller appliances; the stationary tubs with continuous hot and cold water, and the washing machines, set against a white wall, seldom fail to attract her.

The whole store is planned most carefully to appeal to women. The harmonious coloring, the artistic placing of the fixtures, the attractive furniture, and the home-like glow from numerous table lamps—all these combine to take away the cold commercial atmosphere which tends to repel the woman customer in the average electrical store. The small boy, however, is not forgotten. He can pass through the "mess of furniture" to a real scientific sanctum in the rear—the wireless department. Here he can practice sending and receiving to his heart's content, undisturbed by the incomprehensible females who come in looking for such useless fripperies as silk lamp shades and curling irons.

Another feature of the store planning is the lamp rack, which is not placed on the counter in the usual way, but built into the wall case, with individual switches operating each lamp. The great majority of customers are familiar with the type of lamp they desire, and consequently it was thought unnecessary to crowd the counter with the lamp rack.

The offices are on the mezzanine floor, and seats are provided near the cashier's window for the convenience of jobbers' salesmen and customers paying bills.

Everything is done to make electrical shopping easy and pleasant for the customer. The canny

manager has found that the average person who comes in for some small wiring device gesticulates with one finger and asks for "one of those little round things—you know—a thing that screws on, with a bump in it—about this size—made of brass or tin or something," and he has therefore provided a notion case displaying one hundred different articles. The customer can walk up to this comforting device, point a triumphant forefinger at the required article, and say confidently, "I want two of these, please." Thus the store force is saved considerable time, and the customer occasional embarrassment. And efficient selling and pleased customers are the ne plus ultra of merchandising.

INVESTMENT IN ELECTRICAL COMPANIES IN THE WEST

The present investment in the electrical industry of the West at the present time amounts to just about one-eleventh of the total assessed valuation of property in this region as given in government reports. An idea of the growing importance which electricity has shown during the past twenty years is to be obtained by comparing similar figures for 1902. At that time the investment in electrical companies amounted to something less than one-fortieth of the total assessed value of property. This rapid growth is due to the increasing per capita use of electricity which has brought the electrical industry up to an even more important place in community activities.

Handling Practical Problems in the Operation of Motors

The Twenty-Second Paper of a Study Course Designed to Meet the Needs of the Contractor-Dealer and the Electrical Man in the Small Industrial Plant

BY H. H. BLISS

Generators and Motors.—In a great power system, such as one of those which cover the western states with networks of high tension lines, there are many generating plants operating their alternators in parallel. Whenever the supply of water or steam is cut off from one of the "prime movers" driving a generator, that machine ceases to carry its share of the load on the system. The alternator, however, keeps running as fast as before, and is said to be "motoring on the line" since it takes power from the wires instead of supplying it.

To understand this action, one may refer to the difficulty found in driving a generator which carries a load. The armature coils become electromagnets which are attracted to the poles of the field immediately after they pass them, and the periodic reversal of the armature current changes the polarity of the coils exactly at the right time to maintain this action. Now, if the line current enters the armature where it previously left it, all the armature poles are changed and hence repel the field poles which have just passed them. This action serves to keep the machine going.

Fig. A illustrates how one of the d.c. "exciters" is driven in a California power house. This generator, *G*, is on the same shaft as a small water wheel, *W*, and an alternating current motor, *M*. The wheel normally drives the combination at such speed that the motor acts as an a.c. generator and delivers a small amount of current to the bus bars. Occasionally the water is accidentally stopped, and then the a.c. machine picks up the load instantly and drives the generator, so that the supply of exciting current is not interrupted. The d.c. machine could also function as a motor and would continue to run the set in the same direction if the a.c. line were opened, providing the other exciters in the station were left connected to this one.

The reversibility of dynamo machines is further illustrated by the "dynamic braking" employed on electric railways. When the trains coast down mountain grades the motors are left connected to the trolley wire, and as generators they supply energy to the line. In other installations emergency stops are made by short-circuiting the motors, which instantly act as generators and produce heavy currents which retard their motion very greatly.

Back E.M.F.—If a small d.c. motor is connected as shown in Fig. B, with the switch blade on the lower contact point, the battery will drive the motor with a current which the ammeter shows to be large at first but which drops to a lower value as the machine gains speed. The amperes increase again if one presses something against the pulley to retard

the motor. Opening switch *S* gives a clue to the explanation of this action, for the voltmeter continues to indicate an e.m.f. until the motor stops. If the experiment is repeated and the switch quickly thrown to the upper contact, the ammeter shows a current flowing backward through it. We conclude that the motor generates an electromotive force opposing the battery, and that this "counter voltage" or "back e.m.f." is proportional to the speed of the machine. At high speeds the applied voltage is so little in excess of this that it can force only a small current through the resistance of the armature. The variable resistance, *R*, is used during the starting period to restrain the current until the back e.m.f. becomes high enough to protect the motor.

We may define the "net voltage" as applied volts — counter volts. Then the armature current = net volts ÷ resistance, which leads to: net volts = armature current × resistance.

A small series motor, connected as in Fig. B, took 5 amperes at 2 volts when the armature was held still, 1.8 amperes at 3.3 volts when running free, and 2.5 amperes at 3.0 volts when loaded by pressing

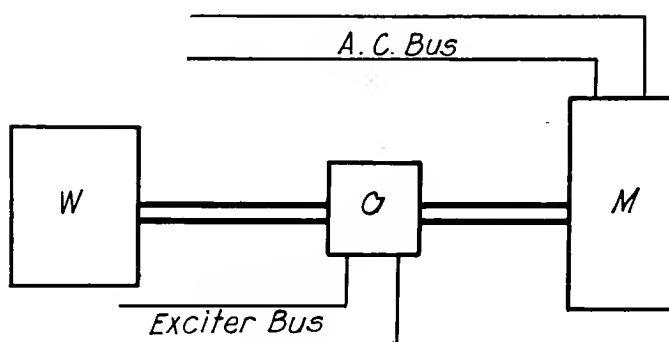


FIG. A

Fig. A—Exciter driven by water wheel with induction motor stand-by; normally the latter machine acts as an induction generator.

against the pulley. Find counter voltage in each case, watts input to motor and watts copper loss in each case. The first test shows that the resistance of the motor = $2/5 = .4$ ohm; net volts running free = $1.8 \times .4 = .7$, and therefore counter voltage = $3.3 - .7 = 2.6$ volts. When loaded the net volts = $2.5 \times .4 = 1.0$; back e.m.f. = $3 - 1 = 2$ volts. Input to motor is 10 watts in the first case, 5.9 in the second, 7.5 in the third. Copper loss = amperes² × ohms = 10 watts in the first case, 1.3 in the second, 2.5 in the third.

Starting Box Resistance.—When a d.c. motor is started with the help of a resistance in series with the armature, the current is at first limited chiefly by

the ohms in the starting box. For an armature of .025 ohm resistance in a 30-hp. motor of 90% efficiency, what resistance must be used to limit the starting current from a 125-volt line to twice the full load current? (Take the drop at the brushes as 4 volts during the starting period.) Solution: 30 hp. = 22.5 kw.; $22.5/.90 = 25$ kw. input; $25,000/125 = 200$ amperes = full load current. Hence the starting current must not exceed 400 amperes. With 4 volts drop at commutator we need $121/400 = .302$ ohm in armature and starting box, or $.302 - .025 = .277$ ohm in box. This solution neglects the slight

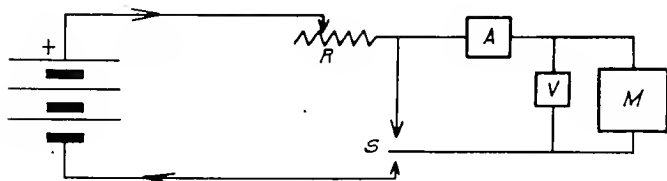


FIG. 'B'

Fig. B—Diagram of connections for showing back e.m.f. of motor.

complication of the field current, which would be only about 3 amperes.

Rule for Direction.—In any motor there is a definite relation between the way the current flows through an armature wire, the polarity of the nearest pole of the field, and the direction in which the rotating part (armature or field) revolves. This relation is readily understood by recalling the "generator rule": Select a standpoint from which the machine is seen to rotate clockwise; then in a wire near a N pole the induced voltage is directed away from the observer.

To apply the rule to a motor, remember that here the e.m.f. induced is a counter voltage, opposing the current. Hence the current comes toward the

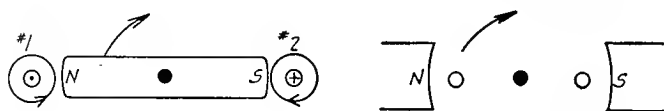


FIG. 'C'

Fig. C—Illustrating motor rule: "If machine turns clockwise, current flows toward you near a N pole, from you near a S pole."

observer in wires near a N pole and flows away from him near a S pole (it being understood that one is looking from the right end of the shaft to make the rotation clockwise).

The rule is readily verified by reference to Fig. C which shows the conditions in both d.c. and a.c. motors. In the alternating machine (at the left) the current in inductor No. 1, coming toward the observer, sets up lines of force running counter-clockwise about itself (Ampere's right hand rule). These force the adjacent N pole upward, tending to rotate the field structure clockwise. Current in wire No. 2, directed away, produces flux as shown, which would force the pole near it upward if it were a N pole; since it is a S pole it goes the opposite way, assisting in the clockwise rotation.

Answers to Previous Problems

235. It must be for constant voltage regulation as the resistance is too high for the coil to be in series with the load. Current through it = .25 ampere; $.25 \times 240 = 60$ ampere-turns.

236. Resistance = .09 ohm; drop = 6.3; $78 + 6.3 = 84.3$ volts.

237. First assume no drop; $10,000/78 = 128$ amperes; then drop = $128 \times .09 = 11.5$ volts, and terminal voltage = $78 - 11.5 = 66.5$. Second assumption of 66.5 volts: $10,000/66.5 = 150$ amperes; drop = 13.5 and terminal volts = 64.5. Third trial: $10,000/64.5 = 155$ amperes; drop = 14 and terminal volts = $78 - 14 = 64$ volts. Take this as final, since additional trials would change it very little.

238. Temperature is 25° above standard; $25 \times .00032 = .008$; $1.275 + .008 = 1.283$, indicating slightly better than full charge.

239. $1.280 - 1.265 = .015$; $.015/.00032 = 47$; $70 - 47 = 23^\circ$ Fahr. Though this is well below the freezing point of water (32° Fahr.) the electrolyte would not freeze on account of the large amount of acid present.

240. There are three parallel sets of 14 cells each in series. Ohms of battery = $(30.8 - 29.9)/60 = .015$; each set of 14 cells has $3 \times .015 = .045$, and one cell has $.045/14 = .0032$ ohm.

241. Battery resistance = .006; external resistance = $.330 - .006 = .324$; $20 \times .324 = 6.48$ volts at terminals.

242. Voltage at first = $6.6 + 20 \times .22 = 11$ volts; afterward $6.6 + 14 \times .22 = 9.7$ volts; difference = 1.3 volts which is $1.3/11$ or 12% of the original voltage; as the speed did not change the flux must have decreased by 12%.

243. Drop is $12 \times .28 = 3.36$ volts; $10.36 - 3.36 = 7$ volts applied to shunt field; $7/10 = .7$ ampere and $.7 \times 1000 = 700$ ampere-turns in shunt field; 12 amperes in series field make 360 ampere-turns; $700 - 360 = 340$ net ampere-turns.

244. Volts at slow speed = $6.5 + 10 \times .3 = 9.5$; at higher speed, $6.5 + 17 \times .3 = 11.6$; rise = 2.1 volts.

245. Had the flux been constant the voltage would have risen to $36/8$ of $9.5 = 42.7$ volts; $11.6/42.7 = 27\%$ of this voltage which was retained, which indicates that only 27% of the former flux was present, or 73% of flux destroyed.

Motor Problems

246. An armature of .08 ohm generates 104 volts opposing an applied voltage of 110. What current flows?

247. An applied voltage of 550 sends 40 amperes through a .2 ohm armature. Find the counter e.m.f.

248. A current of 12 amperes is taken by an armature generating 170 volts back e.m.f. when connected to a 230-volt line. Find the resistance in the armature circuit.

249. When generating a counter e.m.f. of 107 volts an armature of .05 ohm resistance takes a current of 80 amperes. What voltage is applied to it?

250. An armature of .09 ohm takes 200 amperes when its counter voltage is 102. Find the brush voltage if the commutator contact drop is 3 volts.

251. A 10-hp. motor with .1 ohm in the armature and 2 volts drop at the brushes is to be run on 113-volt current. What resistance is needed in the starting box to limit the initial current to 180 amperes?

252. For the same current, what external resistance is in the armature circuit when the counter voltage has risen to 82 volts?

253. Find the ohms in the first step of the starting box for a motor, with armature and brush resistance = .3 ohm, which must not take over 40 amperes on a 230-volt circuit.

254. Explain from Fig. C how the "motor rule" is true for d.c. machines.

255. A motor with .09 ohm in the armature takes 15 amperes on a 240-volt circuit while generating a counter voltage of 195. Find combined resistance in brush contacts and starting box.

256. From the following test data determine the average resistance of a motor field. Which readings were taken at the highest temperatures?

Amperes	.80	.827	.453	.73
Volts	17	18.2	10.9	15

257. Find average armature and brush contact resistance and brush contact drop for the same machine from the following:

Amperes	3.08	4.90	8.00	13.4
Armature volts	.55	.80	1.30	2.0
Brush volts	1.73	2.61	3.05	3.5

Builders of the West

ONCE upon a time, which is the way that all good stories should start, the goddess Electra acted as god-mother to a little lad who was born in Louisville, Kentucky. At the time nobody realized it, but she definitely shaped his life so that when the time came he should take a leading part in the great cooperative idea which her devotees on the western seaboard were later to concoct. William S. Berry was the little tike taken under the wing of the goddess and for the next six years she allowed him to roam over the Atlantic seaboard and Mississippi valley from Louisville to New York, from Nashville to Winchester, finally letting him settle down in the town of Quincy, Ill. Here "Bill" received his schooling in the grade schools and finally at Chaddock College where he took a pre-legal course, as his father was a man of the law and wanted sonny to follow in his footsteps. The lady before mentioned, had something to say, however, and young William had a leaning toward the commercial life. So father was elected president of the newly formed Quincy Electric Light Company and the first summer out of college William S. Berry helped to install the machinery. There it was that Electra wove her web around him and he became so enamored of the little lady with the electric blue eyes that to this day he has remained always constant in her service.

When William S. (nobody seems to know what the S. stands for) Berry finished with the installation at Quincy he went to Lynn, Mass., to take the expert student course that was being given by the Thompson-Houston Company, which later consolidated with the Edison Electric Company to become the General Electric Company. After completing his course he was transferred to the Western district, which embraced all of the territory from the Mississippi River to the Pacific Coast. With his headquarters in Chicago he traveled out into the wilds of Montana and up and down the middle West, or the far West as it was then known, installing electric light plants, blazing the trail for those larger power companies which have since sprung up as that section of the country developed.

After the World's Fair in Chicago in 1893 business slackened and William S. (Berry, not Hart) left the far West for the more effete East where he took a position with the Consolidated Traction Company of Pittsburgh. Here as superintendent of the electrical department he had charge of the rebuilding of the system, of outside construction and of the power stations. Those were the days when a generator ran on a promise, and the promise was liable to be broken from very remote causes, such as the speaking of a harsh word by the motorman to his motors. For ten years "Bill" was on the job twenty-four hours a day, but in 1903 he was offered a chance to go to Russia to put in the street railways in Moscow and St. Petersburg. Leaving the Consolidated on a retaining fee he spent the winter in New York, but in the spring the contract failed to materialize and he was out



WILLIAM S. BERRY

San Francisco Sales Manager, Western Electric Company

who has been one of the moving spirits in putting the entire electrical industry behind the financial programs of western power companies.

looking for a job. Several good offers were made him to enter some other field, but he remained true to his first love, Electra, and tied up with the Western Electric Company in New York in 1904. He wanted to work in New York, for he was tired of the other places, and all went well until 1907, when he was ordered to Cincinnati. Being a good soldier he went, but to his relief the following year he was sent to San Francisco as sales manager of the San Francisco district.

In 1919 Grover Anderson, sales manager of the Electric Appliance Company, conceived the idea that the jobbers should become financially interested in the power companies in whose districts they did business. This idea was advanced by Anderson, and the same year at the Pacific Coast jobbers' convention C. C. Hillis, vice-president and treasurer of the Electric Appliance Company, put the idea before the association. It was applauded, and at the next convention steps were taken by the association to put a working plan into action. To William S. Berry, Electra suggested the idea that this was too big a thing to be indulged in only by the jobbers, and at an early meeting of the San Francisco Electrical Development League he proposed that the League start a drive to see that every member of the electrical industry became

a stockholder of the local power company. For upon the success of the power company depended the success of the entire industry. Under his able leadership the drive was started, and the results were satisfactory in the extreme. Since that time the idea has been tried out in many other communities and has proved one of the most effective methods of inter-industry cooperation. The confidence thus shown by electrical men in their own works makes a powerful impression upon local opinion and helps to establish an attitude of good will towards all electrical interests.

There is an old saying that as the twig is bent so will the tree grow, and the first six years of Bill's life, spent in wandering over the grassy slopes of the Mississippi valley, have left their mark on him. Even to this day he likes to wander over the grassy slopes in search of the little white ball that resembles one of the forms of fungi familiar to all as the puff ball, and the verdant tops of the tables are not unaware of his ability to make balls chase one another. It is not hard to find the reason why Bill Berry is held as one of the most prominent men in the electrical industry on the Pacific Coast, for his personality and keen business judgment make him sought for in all important conferences. To William S. Berry, therefore, god-son of Electra, this issue of Journal of Electricity and Western Industry is affectionately dedicated in recognition of the work he has done in establishing in the mind of the public the fact that the electrical industry has confidence in itself, and is supporting the power companies financially as well as morally. And may he live in the West happily ever after, which is the way that all good stories should end.

PERSONALS

Edwin O. Edgerton, former president of the California State Railroad Commission, has been elected president of the



East Bay Water Company, operating in the cities of Oakland, Berkeley and Alameda, California. He succeeds Wigginton E. Creed, who resigned in order to devote more attention to the affairs of the Pacific Gas & Electric Company, of which he is president. Mr. Edgerton is one of the outstanding figures of the country in the formulation of the policy of regulatory commissions controlling the public utilities, and it is

largely through his work as president of the California State Railroad Commission that the public service companies in California are considered so favorably among the utility companies of the country, as it is only through a broad-gauged policy that the utilities can render adequate service to the public and at the same time remain financially strong. The East Bay communities are particularly fortunate in having at the head of one of their most important public service companies a man of Mr. Edgerton's proven ability and breadth of vision.

Leonard Waldo, electrical and metallurgical engineer of New York City, is in San Francisco on a business visit.

Don C. Ray has been made assistant manager of the commercial department of the Pacific Gas & Electric Company.

W. D. Moriarty has been appointed field representative for the state of Washington for the Northwest Electrical Service League.

L. A. Herdi, of Ogden, Utah, has been instrumental in the establishment of an "electrical home" which was opened at Ogden recently.

Adolph Strauch, range expert with the Pacific Gas & Electric Company, is conducting experiments for prevention of frost by electrical methods.

Charles H. Claytor has been appointed manager of the new business department of the Sacramento division of the Pacific Gas & Electric Company.

George R. Rienks, formerly with the Amalgamated Sugar Company of Ogden, Utah, has accepted a position with the Great Western Sugar Company of Denver, Colo.

W. E. Dunn, vice-president of the Los Angeles Railway Corp., has returned from a business trip to New York and is staying in San Francisco prior to returning to Los Angeles.

A. L. Black, valuation engineer for Ford, Bacon & Davis in the San Francisco office, has undergone a serious operation and is now recovering at one of the San Francisco hospitals.

A. J. Frey, formerly with the Los Angeles Steamship Company, has been appointed as one of the three directors of operation of the emergency fleet corporation of the United States Shipping Board.

Sidney W. Bishop, of Denver, has been appointed executive manager of the recently created Electrical Cooperative League of Denver, Colorado, and has opened an office in the Gas and Electric Building.

E. O. Shreve, San Francisco manager of the General Electric Company, will return from a six weeks' visit to the Hawaiian Islands the latter part of the month. He has been combining business with pleasure.

D. M. Swobe, who is well known in western railroad circles and at present executive head of the western division of the American Short Line Railroad Association, has been elected president of the McCloud River Railway.

Tracy Bibbins and D. E. Harris, of the Pacific States Electric Company, are making a six weeks' visit in eastern business centers, during which time they will attend the annual gathering at Association Island of the National Electric Lamp Association.

John V. Davies, construction engineer and president of Jacobs & Davies, Inc., of New York City, and Ralph Modjeski, consulting engineer of Chicago, have been retained in a consulting capacity to study the possibilities of building either a bridge or tunnel to connect San Francisco with the East Bay cities.

Louis D. Bliss, president of the Bliss Electrical School of Washington, D. C., is a recent Pacific Coast visitor. Mr. Bliss was the official delegate of the Washington section at the recent convention of the American Institute of Electrical Engineers at Salt Lake City. Since the convention he has been visiting in Los Angeles, San Francisco and other Pacific Coast centers.

O. B. Coldwell, vice-president and superintendent of the Portland Railway Light & Power Company, has returned from a visit to eastern business centers. Mr. Coldwell, although vice-president representing the Northwest Division of the American Institute of Electrical Engineers, found himself unable, much to his regret, to attend the convention at Salt Lake City.

R. C. Turner, president of the international Association of Municipal Electricians, was a recent visitor at Colorado Springs, where he conferred with Joseph Caldwell, relative to the national convention of the association which will be held in Colorado Springs, September 6 to 9, 1921. Mr. Caldwell is chairman of the local program committee that will arrange details for the coming convention.

D. I. Cone, electrical engineer for the Pacific Telephone and Telegraph Company; C. P. Osborne, electrical engineer for the Portland Railway Light & Power Company; A. H. Breed, sales engineer for the Pelton Water Wheel Company; J. B. Fiskens, consulting engineer for the Washington Water Power Company, were among those who represented the various Pacific Coast cities at the recent convention of the American Institute of Electrical Engineers at Salt Lake City.

E. N. Britton, formerly managing editor of Journal of Electricity and Western Industry, has gone to Fresno, California, where he becomes assistant to the general manager of the San Joaquin Light & Power Corporation.



Mr. Britton is well known to readers of the Journal of Electricity and to the industry throughout the West. In his new field of endeavor Mr. Britton will have the best wishes of the Journal of Electricity and Western Industry and we look to hear that his activities in the future will continue to bear that same

mark of helpfulness to industry toward which all his editorial efforts of the past have pointed.

G. E. Kimball, who has succeeded **R. L. Eltringham** as electrical engineer of the California Industrial Accident Commission, started his electrical experience in 1899 with the Queensborough Electric Light and Power Company, at Far Rockaway, Long Island, and in the shops of the Brooklyn Rapid Transit Company, Brooklyn, New York. Mr. Kimball was employed by the New Bedford and Fall River Automatic Telephone Companies on telephone maintenance and installation, and as automatic exchange attendant in 1900. The exchanges



in these two cities were the first automatic telephone exchanges of importance installed in this country. Entering the services of the Automatic Electric Company of Chicago, in 1901, he was employed in the factory and the installation, engineering and experimental departments for a number of years. While in this service he was in charge of several large automatic exchange installations. In 1910 he entered the services of the Bay Cities Home Telephone Company, at San Francisco, as superintendent of equipment, and continued with that company until it was taken over and finally dismantled by the Pacific Telephone and Telegraph Company. He remained in the plant department of the Pacific Telephone and Telegraph Company until 1917 when he became associated with the California State Industrial Accident Commission in the Department of Safety as State Electrical Inspector. He has been active in the administration of the General Safety Orders, Electrical Utilization Safety Orders and General Lighting Safety Orders of this commission, and in the formulation of the revised rules.

John J. O'Toole was elected president of the San Francisco Civil Service Commission for the ensuing fiscal year. He was reappointed the first of July for a term of six years.

Charles G. Johnson has purchased the Central Light & Manufacturing Company of Pe Ell, Wash., and plans to make extensions and improvements on the property.

A. L. Olts, of Seattle, has been appointed superintendent of construction on the Brandon, Oregon, hydroelectric project, and has about twenty men at work on the damsite.

John W. Bowdle, formerly wire chief of the San Diego district of the Pacific Telephone and Telegraph Company, has been transferred to Los Angeles, as switchboard engineer.

Benjamin F. Foss, general manager of the B. F. Sturtevant Company of Boston, is in San Francisco and will spend some time in studying business conditions on the Pacific Coast.

R. H. Ballard, vice-president of the Southern California Edison Company, addressed the Progressive Business Club, of Los Angeles, on the subject of the Colorado River Development.

R. R. Bartlett, **Fred M. Hesse** and **Fred. D. Weber** have been appointed as members of the Oregon State Board of Engineering Examiners. Their term of office is extended to July 1, 1927.

George L. Hurst, formerly with the Bethlehem Shipbuilding Company, has opened offices as consulting engineer in San Francisco, Cal., and will specialize in dredging and hydraulic engineering.

W. M. Green, engineer of the United States Reclamation Service in charge of the Green River project, has been in Salt Lake City gathering data on the project. He states that two

parties are now in the field making additional surveys. The field division of the federal land office has turned over all the records to Mr. Green. This action has also been taken by the Green River Company, which made the preliminary surveys and spent approximately \$100,000 on the project.

Spencer Bishop, formerly chief engineer of the Arizona Copper Company, with headquarters at Clifton, Arizona, is a San Francisco visitor and expects to remain permanently in this section of the West.

William S. Edsall, sales manager of the Condit Electrical Manufacturing Company with headquarters at Boston, Mass., is a recent Pacific Coast visitor, and has spent some time at Los Angeles, San Francisco and Seattle.

Percy G. Slingsby, formerly in charge of the Merced Falls and Kittridge power houses of the San Joaquin Light & Power Corporation, has been transferred to Fresno as district foreman. **H. G. Wilkes** has been placed in charge of the power houses.

Herbert H. Cox, station chief of the Eagle Rock Station of the Southern California Edison Company, has been elected chairman of the Los Angeles Section of the A. I. E. E. for the year beginning August 1, 1921. **J. N. Kelman**, president of the Kelman Electric and Manufacturing Company, was elected secretary.

E. F. Scattergood, chief electrical engineer of the Los Angeles bureau of power and light, **William Mulholland**, of the Los Angeles bureau of water works and supply, have returned from a conference with the Federal Power Commission regarding the proposed Colorado River power and irrigation development.

F. G. Baum, consulting engineer of San Francisco, has returned from the Salt Lake convention of the American Institute of Electrical Engineers, where he delivered a paper on high tension hydroelectric transmission, and is now spending several weeks up on the Pit River development of the Pacific Gas & Electric Company.

C. W. Koiner, formerly general manager and electrical engineer of the Pasadena municipal electric light plant, has been appointed city manager for Pasadena with power of administration in all of the departments except that of the library and legal. Mr. Koiner has been manager of the municipal plant for the past thirteen years.

W. R. Putnam, vice-president and general manager of the Idaho Power Co., with headquarters at Boise, Idaho, was elected president of the Northwest Electric Light and Power Association at the annual election held at the close of the recent convention in Portland. Mr. Putnam has been actively identified with the activities of the association for a number of years, particularly through the promotion of merchandise sales. His constructive work as member and as chairman of the electric range committee of the association has marked him a leader in this movement and his ideas are largely incorporated in the policy adopted by the National Electric Light Association in the promotion of electrical merchandising sales. In the troublesome days ahead, salesmanship will be one of the most important attributes of men in the electrical industry. Electrical merchandise and securities of the public service companies must be sold if the electrical industry is to prosper. It is therefore fortunate that a man of Mr. Putnam's ability along these lines has been chosen to direct the activities of the Northwest Electric Light and Power Association for the coming year.



Business Activities in Western Market Centers

SAN FRANCISCO

During the past two weeks there has been evidence of improvement in general business conditions throughout northern California, in spite of the small resumption of building activities. This is considered a favorable indication and has resulted in a noticeable optimistic attitude on the part of business men in general. The resumption of building in San Francisco and the Bay district has been slow; however considerable building is going on, with the exception of a few of the larger business blocks. There is a determined attitude on the part of the builders' exchange that the American plan of operation will be put into effect, and indications that the effort will be successful. The contractors and builders have the support of the business men throughout northern California, Sacramento building men having recently announced their intention of resuming operations on the American plan. There is a large amount of construction work, particularly residence building, being held up as the result of the strike, so that the resumption of building will favorably affect business in general.

It seems to be the consensus of opinion that, with the exception of certain radical labor groups which fail to recognize the necessity of accepting wage reductions proportionate to the reduction in living costs, the most important factors retarding business activities are the lack of confidence on the part of the buying public in the stability of the present prices and the lack of confidence in future economic conditions. The business depression is therefore psychological and dependent upon factors over which it is difficult to exercise control. Anything that will create an optimistic attitude on the part of the buying public and the retail merchant is most important. Leaders in industry are pleading for a normal attitude on the part of the buying public, stating that if everyone would purchase goods in the same amount that they would under normal circumstances, business would result and the present depression would be over. This is good advice.

LOS ANGELES

It seems to be the consensus of opinion in Los Angeles that there are no panic factors present in business conditions. There is no over expansion of bank loans and commercial credits, inventories of consumable goods are smaller than at any time for many months past, and the element of apprehension which tends to shatter business morale is absent. The first two factors can be determined and the statements supported; as to the third, there is only the general and apparent feeling of optimism on the part of business men and the fact that the Federal Reserve ratio has been gradually climbed to a safe level. Careful observers are certain that Southern California has safely passed through the worst of the business de-

pression and that better conditions are to be expected in the fall.

The analysis of living costs in Los Angeles made by the Citizens National Bank indicates that, excluding rent, prices are approaching a level which may be represented by \$1.50, as contrasted with \$1.00 in 1914, and \$2.00 during the highest prices of 1920. The cost of rent is conceded to be out of all proportion to other living costs and tends to conceal the decrease in the prices of consumable goods. If the buying public could be brought to the realization that prices are as low as can be reasonably expected and would therefore purchase goods in a normal quantity there certainly would be a revival of business in all lines of industry in the Southwest. Fundamentally, business conditions are sound; but conditions will not become normal until this fact is appreciated and the public again resumes the consumption of manufactured products in a normal quantity and conducts its purchases in an intelligent manner.

SEATTLE

Conditions in the lumber industry of the Northwest are very bad, and no particular improvement is looked for until fall and perhaps later, weekly production and shipment figures as reported being about equal. Improvement in the lumber industry is dependent upon a reduction in freight rates to Eastern markets and an increase in demand throughout the West. There are indications of a resumption of Oriental demand for the larger dimensions. The resumption of building operation in California will materially improve the demand for lumber throughout the Northwest. Building permits for June were in excess of a million and a half dollars, which is about the same as for May; however this fair volume of construction does not materially affect the lumber industry.

Crop conditions continue good and an excellent wheat harvest is expected. Wool buying is active in the interior. These two factors are expected to loosen credits which is essential for a resumption of industrial activity.

There are several encouraging features in Seattle conditions; retail business is on the increase, in dry goods there is an improvement in the volume of trade. There is now being shipped by the wholesalers more goods than at this time last year. Also in the grocery trade the volume of business is greater than at this time last year. In both these lines the most improvement has been shown in the last two months. This is an indication that the basic conditions are sound and it is believed that business will continue to improve. Employment is being found for an increasing number of men.

PORTLAND

Little change is noted in general business conditions here, although there are some hopeful signs of better conditions.

The labor situation is much relieved with the advent of the harvesting season, and a slight revival in the lumber industry with a good prospect of further activity soon. Building activity continues, although confined mostly to residences and the smaller commercial structures. Crop forecasts indicate bumper crops in all lines and a general business revival is expected as soon as these begin to move in the early fall. Retail trade is about the same as in recent weeks with special sales stimulating interest. Buying in the jobbing lines is still confined to filling immediate requirements. The marine strike is still on but in spite of this grain cargoes are being cleared for Europe at the rate of five or six a week. Lumber output from Oregon and Washington mills has increased from 68 per cent to 70 per cent normal in recent weeks.

Conditions in the electrical industry are practically unchanged although jobbers report business a trifle improved during the past two weeks. Contractor-dealers seem to feel that the situation is becoming a little more stabilized, although business is still far below normal.

SALT LAKE CITY

There is some improvement in retail trade, and the unemployment situation shows a slight tendency toward betterment, due principally to the fact that in many cases men are securing employment on the farms.

In Salt Lake City building operations during June of this year cost 164.4 per cent of the amount spent in June, 1920, which is considered a fair demonstration of the underlying activity and wholesome economic position of the city. Although it costs, generally speaking, 20 per cent less to build a house this year than it did in 1920, there were permits issued in June showing considerably in excess of the money spent in building a year ago. Most of the new work is being done in the construction of small homes. Mortgage firms report ample money for conservative loans on residential property construction.

There is little change in the situation in the agricultural districts. Crop conditions are excellent, and the farmers in general are encouraged over the outlook, in spite of the fact that farm products will not bring high prices this season. There is, however, some improvement in the agricultural and livestock markets.

In the mining sections conditions remain practically unchanged. There has been much conjecture as to when the production of copper would be resumed, and opinions differ widely, varying in time from three months to two years. Some of the operators, however, state that there is reasonable hope for resumption of operations toward the end of this year. In the silver-lead mining camps conditions are fairly good, and in fact some of the larger properties are maintaining normal production of ore.

HAPPENINGS IN INDUSTRY

ELECTRICAL COOPERATIVE LEAGUE ORGANIZED AT DENVER

Throughout the West the idea of organization to obtain the advantages of cooperation of the different branches of the electrical industry is rapidly spreading, the latest recruit being Denver, Colorado. The new organization is to be conducted along the lines that have proved so successful in other western cities. All phases of the industry are represented, and it is the purpose of the organization to aid the home builder, the merchant, and all citizens in the solution of their electrical problems. An advisory committee representing the contractor-dealers, manufacturers, jobbers and central stations has been formed and officers elected to direct the organization through this committee. The officers are: T. O. Kennedy, chairman; E. C. Headrick, vice-chairman, and John J. Cooper, secretary-treasurer.

MINIDOKA PROJECT TO GET ADDITIONAL POWER

Additional electrical power during the summer will be supplied to the Minidoka project through a three-year agreement entered into with the U. S. Reclamation Service, Boise project, and the Idaho Power Company.

Under this contract, approved by the Department of the Interior, one-half of the output of the diversion plant of the Boise project on the Boise river will be leased by the Minidoka project. The transmission of the energy from the power house to Milner will be over the lines of the Idaho Power Company.

The Reclamation Service will build a transmission line from Burley to Milner, and will install a substation for transforming the power from 44,000 to 30,000 volts. It is expected that about 700 kilowatts will be available to the Minidoka project after the arrangement becomes effective, which is July 1st.

The Boise project reserves the right to purchase the power which it needs for use of its drag-line excavators, for work on the drainage system on that project.

The other half of the output of the Boise power house will be dumped into the system of the Idaho Power Company. The five-year lease which the Idaho Power Company had with the Boise project terminated April 30, 1921.

ELECTRICAL CONTRACTOR AND DEALERS OF YAKIMA ORGANIZE

An organization of contractors and dealers in electrical appliances has been formed in Yakima, and A. J. Gladson has been elected president, with A. L. Fullbright, secretary. Seven firms are members of the organization, as follows: Electric Power & Appliance, The Valley Electric Supply Co., Economy Electric Company, Inland Electric Co., Hillman Electric Co., Estep Electric Co., and W. E. Cobel Company. The organization is affiliated with the state association. The Yakima association will have weekly meetings.

CONFERENCE OF SECRETARIES OF NATIONAL STANDARDIZING BODIES

The secretary of the American Engineering Standards Committee, Dr. P. G. Agnew attended a conference of the secretaries of the national standardizing bodies in London. The conference had for its object an interchange of experience and the furtherance of cooperation between the various national bodies in their work of industrial and engineering standardization. The secretaries will submit the suggestions

of the conference to their respective bodies for approval. Arrangements are being made for close cooperation between the national bodies and the International Chamber of Commerce. Special consideration was given to the subject of standardization at the London Convention of the International Chamber of Commerce during the week of June 27, 1921.

EXPERIMENTAL ELECTRICALLY OPERATED VEGETABLE DEHYDRATORS

The problem of the dehydration of fruits is one in which all portions of the West are interested. During the war dried fruits were successfully used to a greater extent than ever before and the demand for these products has continued. The drying of fruits and vegetables in such a way that the flavor and physical characteristics of the fresh material is maintained in the dried product is a difficult problem. Its successful solution depends upon a number of factors, but upon the supply and control of the heat and moisture conditions to a greater extent than others. There is no question but electrical heating is more satisfactory for this purpose than any other method. It is therefore interesting to learn that experiments are being conducted at Modesto, Cal., in the drying of fruit in a dehydrator using electrical heating equipment.

CALIFORNIA RAILROAD COMMISSION APPROVES MERCED POWER PLAN

The State Railroad Commission has approved an agreement entered into between the Merced irrigation district and the San Joaquin Light & Power Corporation in reference to water rights and the sale of electric energy on the Merced river. The power company consented to the establishment of a reservoir and power plant by the district at Exchequer, Mariposa county, and agreed to buy the power at a rate to be fixed by the commission.

Provision was made for compensation to the power corporation if the proposed reservoir should reduce the flow of the river to a degree that would lessen the company's present production.

POWER SECURITIES SALES OF SAN FRANCISCO ELECTRICAL DEVELOPMENT LEAGUE

The sale of the stock of the power companies was undertaken by the League last fall in an endeavor to make every individual connected with the electrical industry in San Francisco and the bay district an owner of stock in one or more of the power companies. The campaign lasted two months. Sales were made by members of teams recruited among the manufacturers, jobbers and contractor-dealers and resulted in the sale of 797 shares of the stock of the Great Western Power Company, the San Joaquin Light & Power Corporation and the Pacific Gas & Electric Company, to over 300 subscribers.

A new power securities sales committee of the League has been appointed, comprising the following men: W. S. Berry, chairman; Sam P. Russell, secretary; C. Felix Butte, Heckert Parker, Earl Alexander, Raymond Alvord and Douglas McMullen.

The above committee has held several meetings to devise ways and means to put on another campaign and will be ready to present their plans in full to the League in time to start a new campaign the first of September. Twenty or

more teams will be organized, known as jobbers, manufacturers, and contractor dealer teams in an effort to secure 1000 new subscribers to the stock of the three power companies. In addition to the actual work of selling by the volunteer team men, the committee is preparing booklets and advertising matter for use during this work, and will present certain recommendations to the members of the League for practical and definite means of applying the spirit of cooperation so that every man and woman directly connected with the electrical industry will be a subscriber.

CALIFORNIA WATER POWER FILINGS ALMOST SEVEN MILLION HORSEPOWER

Permits to develop hydroelectric power now on file with the California State Water Commission total 107. These applications cover 6,802,000 theoretical horsepower and for their development it will be necessary to expend \$693,498,000, or approximately \$100 per installed theoretical horsepower, according to Charles E. Lee, president of the State Water Commission.

"The companies now engaged in the production of hydroelectric energy," Mr. Lee states, "are planning to spend this vast sum of money to supply California industries with much needed power which can be obtained through no other medium, inasmuch as the other natural resources within the state, such as oil, gasoline and natural gas, already are carrying their maximum load and cannot be depended upon to furnish additional power in the future. California's power problems can be solved only by the more intensive development of the latent powers in her rivers and mountain streams, and it is in this direction that the hydroelectric companies are turning, as indicated by their applications for water power permits."

The following table was prepared by the Water Commission to show the water sheds involved in the filings:

River	Number of Important Plants	Theoretical Horsepower	Cost of Development
American	4	194,000	\$ 9,570,000
Feather	8	723,000	86,500,000
Kern	7	347,000	31,620,000
Kings	11	906,000	107,500,000
Klamath	6	499,000	38,300,000
Merced	4	211,000	19,430,000
Mokelumne	3	39,000	1,940,000
Owens	8	164,000	14,508,000
Sacramento and upper tributaries, including Pit River.....	15	871,000	86,900,000
San Joaquin	14	1,803,000	204,000,000
Stanislaus	4	121,000	4,160,000
Tuolumne	13	614,000	58,370,000
Yuba	10	310,000	30,700,000
Total.....	107	6,802,000	\$693,498,000

Irrigable land in California amounts to a total of 9,699,000 acres, according to the same authority, and applications have been received for the use of water on a total of 10,890,000 acres. Permits have been granted by the commission for the use of water for agricultural purposes on 618,400 acres.

OFFICIAL OPENING OF BONNEVILLE IRRIGATION PROJECT

The official opening of the Bonneville irrigation project was celebrated on July 4, with the gathering of a large crowd which listened to addresses by Governor Maybey of Utah, and participated in an interesting program of various events.

Governor Maybey declared that the Bonneville irrigation district project would result in the regeneration and rejuvenation of Bountiful, and would make it the best of the suburbs of the capital city of the state.

An electric switch was installed on the speakers' stand, and was closed by the governor in token that the electrically operated pumping plant had started raising water from the Jordan River 300 feet up the hillside at North Salt Lake.

"I would rather reclaim one acre of land," said Governor Maybey, "than be a conqueror of a city. Utah has many acres to reclaim, some 17,000,000, and only 5,000,000 have been reclaimed."

Trips were then taken over the district and to the pumping plant, where Oro McDermitt, engineer of the district, and representatives of the Shattuck Construction Company, which built the works, explained the various features of the operation. Many made the climb up the steep hillside to where the water poured from the pipe into the cement-lined canal. The Bonneville irrigation project is one of the largest in the West, and will reclaim thousands of acres of land immediately north of Salt Lake City.

CALIFORNIA LETS \$6,000,000 IN ROAD CONTRACTS FOR 1921

New contracts for approximately \$6,000,000 for highway construction have been let by the California State Highway Commission during the first six months of this year. Thirty-five contracts have been let, the work is well distributed throughout the state and involves construction in twenty-one counties. Bids for work in other sections are now being called for, and, according to a recent announcement by the commission, an extensive construction program is actually under way.

S.S. TAMIAHUA LAUNCHED AT OAKLAND

The largest merchant vessel constructed on the Pacific Coast, and when designed, the largest oil tanker in the world, was launched July second by the Moore Shipbuilding Company, of Oakland. A record was also made in the time of construction, the vessel being only seventy-six days on the ways. The Tamiahua will be placed in commission about the twentieth of August, and will carry a cargo of about 100,000 barrels of heavy Mexican crude oil, together with stores, etc., for twenty-two days' continuous steaming. The tanker was built for the Atlantic Steamship Lines of the Southern Pacific Company, and will operate between Galveston, New Orleans and New York.

The ship is 520 feet long, over all, and is designed to make 11 knots an hour. She will carry 16,340 tons total dead weight at 28 feet draft.

CALIFORNIA COOPERATIVE CAMPAIGN PASSES RESOLUTIONS AGAINST COMMERCIALIZING "HOME ELECTRICAL" EXHIBITS

Two meetings of the California Electrical Cooperative Campaign during the current month, one in Los Angeles and the other in San Francisco, were called especially for the purpose of protesting against the advertisement which appeared over the signature of the Bryant Electric Company on the front cover of Electrical Merchandising for June, 1921. According to members of the Advisory Campaign Committee the statements as there set forth are not true and above all are not in accord with the spirit of the Campaign; hence the following resolution was unanimously passed:

"Whereas, Among other things the California Electrical Cooperative Campaign has been organized purely to promote a better understanding of the uses of electricity in the home and in no manner to endorse any particular manufacturer's product,

"Therefore, Be It Resolved, That we, the members of the Advisory Committee of the California Electrical Cooperative Campaign, most emphatically protest against such advertisement as appeared over the signature of the Bryant Electric Company as instanced in that of the front cover of Electrical Merchandising for June, 1921, since the statements contained therein not only violate the principles of the Campaign, but are not based on fact.

"And, Be It Further Resolved, That the Bryant Electric Company be requested to make full retraction of the statements contained therein."

NOTED ENGINEERS REPORT ON SAN FRANCISCO-OAKLAND BRIDGE

Industry in and about the central part of California is very much awake to the possibilities which will result from bridging the distance between San Francisco and Oakland. It will cause the development of that section of the West as perhaps nothing else could. Two of the nation's most noted engineers, J. Vipond Davies, who built the Hudson River Tunnel, and Ralph Modjeski of Chicago, who is an authority on bridge engineering and construction, have been employed to make a report on the situation. Their report recommends a 3500-ft. tunnel on the San Francisco side, connecting a bridge 11,500 ft. in length, a 3500-ft. pile trestle and 12,000 ft. of fill or mole; this connects the civic centers of San Francisco and Oakland by a distance but slightly more than one mile longer than an air line between the two, or about 9.4 miles. The project completed as outlined would cost in the neighborhood of \$40,000,000. As to whether this plan is the one that will be ultimately used or not, no one is able to say at present. The fact remains, however, that there is a great deal of interest in the subject and people of the bay communities have resolved that the discussion shall continue until definite action be taken in the matter of bridging the San Francisco Bay.

GAS APPLIANCE SOCIETY OF SAN FRANCISCO ORGANIZED

The retail gas appliance people of the San Francisco Bay district have organized the Gas Appliance Society, and will hold weekly luncheons at the Stewart Hotel. The object of the society is to promote the sale and use of gas appliances through cooperation and publicity and by a campaign of education.

PORTLAND HAS NEW INDUSTRIAL COMMITTEE

Industrial activities of the city of Portland will be under the care of a new managing committee of the department of industries of the chamber of commerce. The board of directors has announced the personnel of the new committee to be: W. P. LaRoche, chairman; L. T. Merwin, J. H. Gallagher, A. H. Devers, Davis S. Sterns, L. R. Wheeler and F. H. Strong with J. D. Abbott, ex-officio from the board.

NORTHWEST ELECTRICAL SERVICE LEAGUE OPENS OFFICES

Under the leadership of Stephen I. Miller, secretary-manager of the League, offices have been opened at 535 Central Building, Seattle, Washington. The field man for Washington has been appointed and the representative for Oregon will be appointed within a few weeks.

OGDEN, UTAH, HAS MODEL ELECTRICAL HOME

Ogden's model electrical home, near Tyler Avenue and Twenty-sixth Street, was opened for the first time to the general public the latter part of June. The visitors found in the home a complete showing of the latest and best methods of installing a modern home lighting system and a large number of electrical labor-saving devices. From the beautiful light fixture at the front entrance to the lighting switch at the garage door, in the basement, the electrical equipment is complete.

The living room, with its large fireplace and bookcase, is made cozy with electrical conveniences, including electric player piano and electrically driven phonograph. The lighting fixtures are of the very latest type, both ceiling, wall and stand lights. The electric outlets for the stand lamps, for the vacuum cleaner and other conveniences, including spot light heaters, are installed in the most convenient places. Lights for the room can be turned on or off at either of the en-

trances, from the front or from the back wall. Adjoining the living room is the dining room, where both the dining table and the tea wagon are equipped with four-way convenience plugs, which can be used for that number of electrical table articles. There are convenience outlets in the baseboards, at the side of the sideboard, and under the dining table, which can be used as desired. In the kitchen the electric range is installed and there are convenience plugs at the kitchen cabinet and in the side wall for the electric dishwasher.

The three bed rooms have convenience outlets so arranged that heaters, heating pads, electric curlers, hot water heaters and similar devices can be attached or lights placed at the side or over beds, while the vacuum cleaner is equally available. The bathroom has sidelights for the mirror, and convenience outlets to handle heater, curler, hot water and other equipment. Closets are electrically lighted, one in which lights automatically turn on when door is opened and off when door is closed. Laundry equipment in the basement, entirely of the electric type, is shown as conveniently installed, with electric heater on the hot water tank, electric washer, electric dryer and electric ironer, together with electric iron and iron board.

The home was built by L. B. Swaner, and the companies that have joined in the enterprise are The Lighthouse, Utah Power & Light Company, Redfield Electric Company, Larison Electric Company and Ogden Electric Supply Company.

WESTERN FARMERS CONFER IN PORTLAND

Marketing conditions and problems of a similar nature formed the subject matter of the discussions before the 200 delegates from marketing organizations of California, Washington, Montana, Idaho, Utah and Oregon at the convention held in Portland, July 11 to 14, sponsored by the farm bureaus from six states. W. B. Armstrong of Yakima, president of the Washington Farm Bureau Federation, was chosen to act as chairman of the sessions and H. L. Hull, also of Yakima, was elected as secretary.

CALIFORNIA INDUSTRIAL CENTERS TO HAVE UNIFORM SWITCHING CHARGES

The acceptance by the Southern Pacific Railroad Company of the State Railroad Commission's plan of uniform switching zones and charges for the state's chief industrial centers, ends a controversy that has been before the state body and the Interstate Commerce Commission for four years. Not only is the order of the commission as to South San Francisco, Oakland and Los Angeles, now in effect, but the railroad company has voluntarily adopted the recommendation of the commission that the same schedule be applied to Oakland-Alameda, Oakland-Berkeley and Berkeley-Emerlyville switching territory. Six large industrial zones are now on an equality as to distances and rates and a substantial reduction in charges is effective.

The acceptance of the commission's order and recommendation is indicated by the Southern Pacific Company's publication of the switching tariffs, and this puts an end to reports current when rehearing of the case was denied June 30, that the railroad company intended to carry the issue to the Interstate Commerce Commission and also to appeal to the courts.

In the original proceeding, popularly known as the South San Francisco switching case, Alameda, Berkeley and Emeryville did not intervene and therefore only a recommendation could be made by the commission as to them. The voluntary adoption of this recommendation by the Southern Pacific Company will, in the opinion of the commission, be of great benefit to the industrial development of the trans-bay cities.

Trade Notes

New Exhibit Demonstrates Interchangeability.

A manufacturer of wiring materials has recently devised an attractive means of transferring its "still life" exhibit from the contractor-dealer's wall to his counter. One of the most important features of the exhibit is that it permits the interested customer to try with his own hands various combinations of the fittings or devices under consideration, so that he is no longer obliged to look at the separate parts from a distance and visualize their relationships.



Live exhibit for the dealer's counter capitalizes the drawing power of illumination and that curious human instinct to acquaint itself with products and possibilities through direct handling.

This display is illuminated so that it forms a useful purpose on the counter or table of a distributor or contractor-dealer in lighting the counter at a place where more light would be welcomed by the clerks.

Those who have seen this exhibit predict that it will prove a very effective "silent salesman" because it

Western Agencies, Inc., Move to New Location —

Western Agencies, Inc., are moving their offices and stock of merchandise to their well-equipped new home at 711 Mission Street, San Francisco. This concern is factory representative for Rutenber Motor Company, R. Williamson Fixtures, and other lines of electrical appliances. The feature of the new location will be a large display room with electric ranges and other appliances actually connected up for demonstration purposes.

Salt Lake City Architects Affiliate with American Institute

National affiliation with the American Institute of Architects by the local chapter of architects has just been completed, under the direction of Burton E. Morse of Twin Falls, Idaho, and G. Y. Cannon, of Salt Lake City, who attended the national convention of the institute at Washington, D. C.

Coast Equipment Company Is Incorporated —

The Coast Equipment Company, of San Francisco, industrial engineers and factory representatives, has recently been incorporated with the following directors: H. S. Tittle, Robt. Dalziel, Jr., L. A. Somers, Thomas Harris and Alfred Potbury. The elected officers of the company are: H. S. Tittle, president; L. A. Somers, vice-president; Alfred Potbury, secretary-treasurer. L. A. Somers is general manager, and Alfred Potbury chief engineer. The company has offices in San Francisco, Los Angeles, Portland and Seattle.

Berkeley Has New Electrical Store —

The Edison Electric Company, under the proprietorship of R. V. Oyler, has opened a store at 2082 University Avenue, Berkeley, California. A formal opening took place on July 9. Scandia Pacific Oil Engine Company Changes Name —

Scandia Pacific Oil Engine Company announces that beginning with July 1st it will operate under the name of Pacific Diesel Engine Company and devote its entire plant to the manufacture of marine and stationary Diesel engines.

Seattle Has New Engineering Firm.

The Morford & Mowry Engineering Company, of Seattle was recently organized with the intention of specializing in irrigation, drainage and municipal work, such as water supply and sewer systems. The firm is composed of Samuel Humes, formerly King County Engineer, Carl E. Morford, formerly assistant county engineer and Charles P. Mowry, office manager of the King County engineering department, under Engineer Humes. The firm is now engaged in a diking project, involving 7,000 acres of Skagit Bay lands for the Skagit Bay Lands Company. Offices are maintained in the Lyon Building.

Mees & Mees Have New Location.

In order to provide more adequate space to properly take care of their rapidly expanding business, Mees & Mees, consulting engineers and industrial architects have taken offices on the third floor of the Kinney Building, Charlotte, North Carolina.

MEETINGS OF INTEREST TO WESTERN MEN

Jobbers' Convention at Del Monte

The Pacific Coast Division of the Electrical Supply Jobbers' Association held a very successful meeting at Del Monte, June 6 and 7, immediately preceding the convention of the N. E. L. A. The meetings were devoted largely to the sales possibilities of labor-saving devices, the marketing problems and other conditions affecting the wider distribution of this class of appliances.

One of the most important papers was presented by D. E. Harris, vice-president and sales manager of the Pacific States Electric Company, in which he showed by means of charts the total number of labor-saving devices marketed in the West by the jobbers during 1920, and the total kilowatts installed on power company lines. Burrel S. Manuel, general manager of the Electric Railway & Manufacturing Company, gave an informative paper on the sale of this class of appliances and some of the problems to be overcome.

In the open meeting, conducted by Percy Booth, Pacific district manager of the Edison Electric Appliance Company,

a general report was presented which consisted of a review of conditions in connection with the sale and distribution of labor-saving devices. The report was subdivided under the following headings: market conditions, factory and stock conditions, sales possibilities in various lines, methods of distribution, and, other points and problems. The report was particularly helpful and should result in increasing the sale of electrical appliances.

One of the most important phases of the jobbers' activities during the continuance of slack business is more intensive salesmanship as well as better service to the purchaser. That this situation is appreciated by the men in attendance at the convention was brought out through the discussion of the various papers. The satisfactory volume of sales of certain lines of appliances upon which sales emphasis was placed supports this contention.

It is proposed to hold the next meeting at Paradise Inn, Mt. Rainier National Park, August 30, 31, and September 1. This is somewhat provisional, depending upon the number that indicate their intention of attending.

San Francisco Section A. I. E. E. Entertains A. W. Berresford, President of the Institute

On the evening of July 6th at the Engineers' Club was held a banquet in honor of A. W. Berresford, president of the American Institute of Electrical Engineers. Robert Sibley, editor of Journal of Electricity and Western Industry and vice-president of the Institute, acted as toastmaster, introducing Mr. Berresford as one not only of interest to Institute members due to his prominence in the Institute, but also particularly of interest to the West, as Mr. Berresford has done so much in the development of safety apparatus and protective devices for industry throughout the nation. Mr. Berresford brought home the point in his address that the Institute is doing everything possible to stabilize the local section's activities, and he urged that these activities be given as much emphasis as possible by the local members. He recounted many instances in which the Institute is endeavoring to bring home to the members the appreciation the governing body has for this development. Mr. Berresford sees great possibilities in the development of the Pacific Coast, and particularly the development of the Institute activities on the Pacific Coast.

On Friday afternoon, July 8, the San Francisco Section were the guests of the U. S. S. Tennessee, at which time an inspection of the electrical equipment of this electrically appointed vessel was thoroughly reviewed, and the efficiencies of the modern drive electrical brought home to the members.

Successful Contractor-Dealer Meeting at Eugene, Oregon

The annual meeting of the Oregon Association of Electrical Contractors and Dealers proved to be of unusual helpfulness this year. Better business methods and more satisfactory service to the public were the keynotes of the convention. The latter has been brought about through the efforts of the state association, A. C. McMicken, sales manager of the Portland Railway, Light & Power Company, told the delegates, by obtaining a close cooperation among the dealers and contractors that resulted in better business conditions. M. H. Aylesworth, executive manager of the N. E. L. A., addressed the delegates in his usual forceful and helpful manner. Robert Sibley, editor of Journal of Electricity and Western Industry, gave an illuminating talk on the industrial growth of the West, showing that the growth of the West is dependent upon the increase of hydroelectric development.

Portland's plans for the Atlantic-Pacific Highways and Electrical Exposition were the subject of a talk given by John E. Gratke at the banquet held at the Hotel Osburn. G. E. Armstrong, Pacific Coast editor of Electrical World, spoke on the subject of the "Electrical Press."

L. B. Sigwart won the association cup in the first annual golf tournament. The contractor-dealers won the ball game from the jobbers in the annual ball game.

Rocky Mountain Electrical Cooperative League

The regular monthly meeting and luncheon of the Rocky Mountain Electrical Cooperative League was held on June 20th. One of the features of the meeting was a demonstration talk by Mrs. Louise Palmer Webber, electric cooking school demonstrator, of Portland, who demonstrated some methods of selling electrical appliances to the ultimate user—the woman of the house. Mrs. Webber emphasized the importance of having all branches of the industry cooperate, and recommended the employing of one or more efficient lady demonstrators to assist in working up prospects among the housewives, and also demonstrating the use of appliances after they have been sold. Mrs. Webber spoke of the Electrical Exposition to be held in Portland in 1925, and stated that the West and the Northwest were going to take a very prominent part in it.

John C. Jones, manager of the Westinghouse Company's Los Angeles branch, and Harry D. Randall, manager of the

General Electric Company at Denver, were guests. Mr. Jones told of what has been accomplished by the California Co-operative Campaign, and complimented the Rocky Mountain Electrical Cooperative League on the way they are working together.

San Francisco Development League Enthusiastically Supports All Year Session

At the meeting of the San Francisco Electrical Development League held in the Palace Hotel on July 11th, it was emphatically voted to hold meetings of the league throughout the year and not to dispense with the meetings during the summer months as has hitherto been the practice. There is no question but the future meetings will continue to be very successful; this being an assurance as the result of the enthusiasm shown in voting. The speaker of the day was Dr. George E. Pomeroy, who discussed the Armenia-Turkey relations. Dr. Pomeroy has spent some time in the near East and gave a very clear exposition of the Turkish viewpoint on the atrocities that have taken place during the last several years. Ed Cutting, former president of the league and formerly Pacific Coast manager of the Edison Storage-Battery Company, made a few remarks, complimenting the league upon the splendid growth that has taken place during the last two years.

Idaho Reclamation Association Holds Convention

Idaho reclamationists, nearly 300 strong, met in the chamber of commerce chambers on June 13, and decided that the work of the Idaho Reclamation Association, founded by the late Major Fred R. Reed, should be carried on in a greatly enlarged plan.

At the afternoon session Governor D. W. Davis of Idaho gave a stirring address on "Federal Aid for Reclamation," and State Reclamation Commissioner W. G. Swendsen spoke on "Economic Use of Idaho Water Resources." Appealing addresses to continue the work of the association were made by E. F. Ayers, secretary of the Idaho Chapter, American Association of Engineers, Guy Flemmer of Boise, Will H. Gibson of Mountain Home, and others. At the business session following the afternoon meeting, glowing tributes were paid to the work of Major Reed.

The sessions were presided over by S. E. Brady of Pocatello, president of the Idaho Reclamation Association. Addresses at the morning meeting were made by E. F. Ayres of Boise, and President Brady, with the address of welcome by W. R. Siders and the response by Will H. Gibson. The afternoon session was addressed by Governor Davis, Commissioner Swendsen, R. M. Patrick, attorney for the American Falls project, and C. W. Wells of Denver, general commissioner for the western land office.

The board of directors for the coming year was chosen before the afternoon session adjourned. The new members are: Arthur Beymer, Rupert; Dr. W. F. Howard, Pocatello; John E. Pincock, Madison; F. E. Johnson, Boise; P. C. Meredith, Buhl; Senator I. E. Rockwell, Bellevue. The holdover members of the board are J. M. Thompson, Caldwell; C. E. Oles, Idaho Falls; E. K. Hayes, Emmett; S. Grover Rich, Burley; C. Ben Ross, Parma; J. T. Young, Pocatello; E. M. Whitzel, Dubois; Senator F. R. Gooding; W. H. Gibson, Mountain Home.

COMING EVENTS

NATIONAL ASSOCIATION OF ELECTRICAL CONTRACTORS AND DEALERS
Annual Meeting—Buffalo, N. Y., July 18-23, 1921

INTERNATIONAL ASS'N OF MUNICIPAL ENGINEERS
Colorado Springs, Colo.—Sept. 6-9, 1921

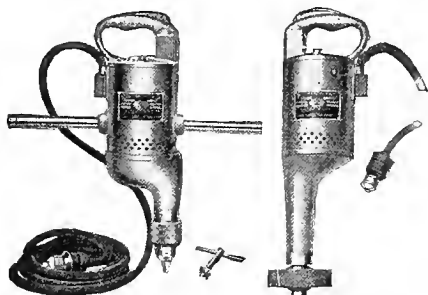
AMERICAN ASSOCIATION OF PORT AUTHORITIES
Annual Convention—Seattle, Wash., Oct. 11-14, 1921

LATEST IN APPLIANCES AND EQUIPMENT

(Small motors for a wide variety of uses have been recently introduced by a number of manufacturers. New types of lighting units for specific conditions are now available for the illuminating engineer. Lighting fixtures are described in two recently issued bulletins.—The Editor.)

PORTABLE ELECTRIC DRILL AND GRINDER

There are many uses for portable electric drills and grinders; more particularly the grinders are used in foundries for cleaning up castings and in general machine shops for smoothing repairs made by welding, portable electric drills may be employed for a multi-



The illustration to the left is of the Wodack portable electric drill, $\frac{1}{2}$ -inch size. The motor is of the universal type and the drill is equipped with automatic switch. The portable grinder is of the same general construction.

tude of uses for repair work. In such service the reliability of the equipment is an important item. Drills and grinders of the portable type put out by the Wodack Electric Tool Corporation are of high grade construction and have special features that commend their use.

FRACTIONAL HORSEPOWER BALL BEARING MOTORS

An increasing demand for high grade motors for application to domestic appliances, pumps, machines and other devices which are operated from lighting circuits is met by a complete line manufactured by the Ohio Electric & Controller Company. The motors are ball bearing, thereby eliminating friction to a maximum degree and providing for ease in lubrication. Particularly efficient ventilation is also a feature of these motors.

ELECTRIC BUFFER AND GRINDER

Buffers and grinders in which the wheel is attached to the spindle at either or both ends find important applications in the machine shop, tire shops and other places for grinding, buffing and polishing. The individual motor drive has many advantages over the belt driven machine. A substantial and well designed line of buffers and grinders has been developed by the Valley Electric Company, of St. Louis. The motors are dust proof, the end plates are solid and fitted with SKF self-aligning, double row ball-bearings. A high and low type stand is optional equipment for all sizes of motors, from $\frac{1}{2}$ to 5 hp. Either 3600 or 1800 rev. per min. motors also are optional.

DINGS MAGNETIC TYPE SEPARATOR

The Dings magnetic pulley type separators are short center conveyors driven by magnetic head pulleys. When coal is

handled upon a long inclined conveyor, it is necessary to provide ample driving surface by using a large diameter pulley. It is also necessary for economy to use high speeds and heavy cross-section load. Under such conditions it is more economical to deliver to a wider and slower speed short center conveyor with a small diameter magnetic head pulley. The savings that result from the use of magnetic pulleys lie principally in the insurance from shut-downs, and the new type of apparatus is provided to make possible the obtaining of this insurance at a minimum cost.

FUSED ENTRANCE SWITCH

The Westinghouse Electric & Manufacturing Company has recently placed on the market a fused entrance switch. This switch is rated at 100 amperes, and 2500 volts, and is made in two and three poles single throw. These switches are principally used by distributing companies at the end of their 2500-volt distributing lines, and at the entrance of the line to the customers plant.

This switch has a maximum of safety first features. All live parts are completely enclosed in pressed steel case and tank. The leads go in through fibre bushings, and the cover is interlocked so that it cannot be opened when the switch is closed. The fuses are entirely cut off from the line when the switch is open.

The switch is primarily an oil immersed knife switch with fuses mounted in the top. The contacts are a special self-aligning knife blade type. The moving contacts are carried on a wooden drum. The fuse clips are also self-aligning and are mounted on a heavy wooden base, and are designed to take standard fuses.

The switch has a large application on high voltage distribution where safety first features not contained in the ordinary knife switch are desired.

ENCLOSED MAGNETIC STARTING SWITCH FOR SMALL A.C. MOTORS

An improved type of enclosed magnetic starting switch for small a.c. motors has recently been developed by the General Electric Company. They are for use with motors of from 3 hp., 110 volts up to 5 hp., 220, 440 and 550 volts. The switches are suitable for use with momentary contact start and stop push button stations, or snap switches, float switches, pressure governors, thermostats, etc.

The apparatus consists of an operating magnet, contactor, and protective plugs, all mounted on a sheet steel base and enclosed in a case with a cover hinged at the top. The operating magnet is wound for full line potential, is waterproofed, and easily removable from the front.

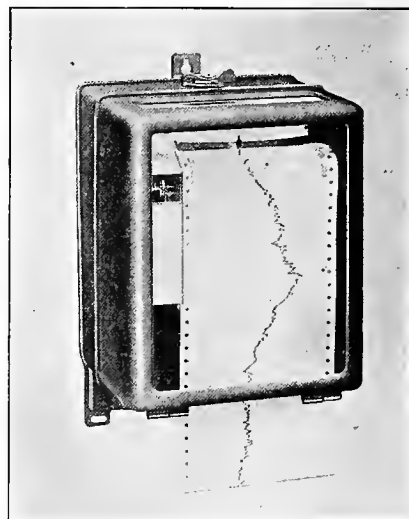
The protective device is in the form of two removable inverse time element protective plugs, which safeguard the

motor against overloads ordinarily met in service.

The switch is very easy to install, being provided with three knockout holes at the top and two at each side for $\frac{3}{4}$ -inch conduit. They also have holes for mounting screws in the back plate. All parts are very easy of inspection, and renewal of vital parts is a very simple matter, owing to their accessibility and design.

A GRAPHIC KVA. METER

There has been an insistent demand for a kva. meter on the part of power companies, as it is generally recognized that the cost of serving a power consumer is affected by the power factor of his load, and rates are now being put in effect which take the power factor into account. An instrument has been developed by the Esterline-Angus Company which records graphically kilovolt-amperes by maintaining a fixed phase relation between the field pro-



Graphic kva. meter showing chart and type of record recorded upon paper. Note the legibility. The dial at the top shows the instantaneous consumption.

duced by the current and that produced by the voltage. The company also announces the production of two other new instruments: a graphic a.c. ohm-meter which records graphically the alternating current resistance of liquids, the concentration of solutions or density of electrolytes, for use in boiler rooms, rooms, chemical plants or water plants; a portable concentration meter for showing the concentration of salts in water for use in boiler rooms and water-softening plants.

LIGHTING UNITS THAT ADD TO EFFICIENCY OF ILLUMINATION

The Benjamin Electric Manufacturing Company, of Chicago, has recently brought out three new industrial lighting fixtures that possess certain advantages under special conditions for which they are designed.

Under conditions demanding a high degree of visual acuity it has been found that the Mazda C lamp with a filter to remove certain deleterious rays is superior to good north daylight because it is possible to obtain correct illumination invariable in intensity and quality. Under these conditions the eye need only adjust itself to one intensity of illumination of invariable quality. There has been difficulty in adapting glass discs to industrial lighting equipment, which has been overcome in the "Dalite" unit. The "Dalite" glass discs are attached by means of suitable holders to the regular 8, 9, 10 and 12-inch standard Benjamin porcelain enameled steel reflectors. These holders are hinged, making it a simple matter to clean both sides of the glass disc.

The by-products of manufacturing processes in many industries form dense clouds of heavy dust and other foreign material, which settle upon the reflectors and lamps, necessitating frequent cleaning in order that a high level of illumination may be preserved. Unless special provisions are made for cleaning, the neglect results in seriously impaired illumination, and in time brings about deterioration of the lighting units. The Type RR Threaded Fixtures overcome any difficulties involved in cleaning, and present several other very convenient and highly desirable features. The fixtures are made with cast hoods, designed to accommodate threaded reflectors of the R.L.M. dome standard, bowl and symmetrical angle type. The threaded connection permits easy removal of the reflector from the hood for cleaning. That is, the reflector simply unscrews from the hood.

There is a wide variety of industries where lighting equipment is operated under conditions where gases, vapors, dusts or other explosive or inflammable materials are apt to accumulate.

Illumination other than natural lighting is extremely difficult under these conditions, and many efforts have been made to render artificial lighting entirely safe. So important is this consideration that in many states there are ordinances and regulations which seek to eliminate the life and fire hazard, compliance with which has been reached with great difficulty.

The Benjamin Electric Manufacturing Company has developed a gas and vapor-proof unit of the heavy duty type which meets every requirement and makes electrical illumination, safe as it ordinarily is, still safer under the conditions named in our first statement.

The unit is sealed against the entrance of foreign material, both at the conduit and at the globe. These are the only two places where joints are made, thus effectively sealing the fixture against entrance of anything from the outside. Hot electrical parts cannot come in contact with explosive or inflammable material. If the lamp breaks, a fire or explosion will not ensue even if the premises contain inflammable gases, dust or kindred material, because the lamp bulb is enclosed tightly within a vapor proof globe. The hood is made of cast metal, finished in green enamel. The reflector is porcelain enameled steel. These, together with the glass globe, constitute material which is entirely unaffected by fumes which would tend to destroy an ordinary fixture.

Books and Bulletins

Third Power Kink Book

Compiled by the Editorial Staff of Power. Published by the McGraw-Hill Book Co., Inc., New York. 264 pp., 6 x 9, illustrated. Price \$1.50.

A collection of short articles from "Power," describing kinks which have proved valuable as time and money-savers in power plant work. Each kink is described in the words of its inventor and practically every one of the three hundred kinks is accompanied by a chart or diagram that makes the subject doubly clear. The book helps power men to meet emergencies and to avoid shut-downs. The book is divided into chapters dealing with kinks for various parts of the power plant and is completely indexed.

Lighting for Eye Comfort

An attractive illustrated booklet with the title "Lighting for Eye Comfort," has recently been issued by the National X-Ray Reflectors Company. It shows the effects produced by the various types of lighting equipment in public buildings, offices and in the home. The pamphlet is of value to architects and others interested in better illumination.

The Secret of Entrancing Light

Home illumination is receiving much attention by all branches of the electrical industry. Improved lighting fixtures for the home must be attractive in appearance, blend with the scheme of decoration and be an efficient means of illumination. The Lightolier Company, of New York, has issued an illustrated pamphlet describing their line of home lighting fixtures, with suggestions for the type of fixture best adapted for the lighting of the different rooms in the home. The purpose of the booklet on "The Secret of Entrancing Light," is to point out the many opportunities in lighting in every home, and to show how light can be used as an aid in securing the desired lighting effects and decorative schemes.

Recent Westinghouse Bulletins

The folders and pamphlets issued by the Westinghouse Electric & Manufacturing Company are always of interest to the men in the electrical industry. A leaflet on space heaters for commercial and domestic heating illustrates and describes the construction and distinctive features, as well as the application of these heaters and lists over one hundred specific uses. Folder 4456, entitled "Fans for Efficiency," describes the "Venturs Fans." "Control Apparatus" is the subject of a leaflet listing type F magnetic-switch double-section control panels, together with type 22-F magnetic-switch control panels. "Motorize Your Work" is the title of a folder on motors illustrating several of the smaller motors manufactured by the company.

Power Factor Improvement

Several large cement concerns, a flour mill and two or three pulp and paper mills have been able to improve the

power factors on their power system by the installation of synchronous motors and C-H Magnetic Clutches. The Bessemer Limestone & Cement Company has installed seven synchronous motors and magnetic clutches for driving combe bills, the high static friction of the mills being overcome by means of the magnetic clutch. The synchronous motors are allowed to come up to speed before the clutch is energized. The short interval of time which it takes for the magnetic pull between the clutch surfaces to attain its full strength allows sufficient slip to secure a smooth start.

In the case of a rubber mill, 600 hp. was needed for new plant equipment. The power plant was already overtaxed and the power factor was down to about 65%. By installing a synchronous motor, the power factor was increased to 80% and the generating plant was so relieved that there was sufficient capacity to take care of the full 600 additional horsepower which was necessary. A C-H Magnetic Clutch permits the motor to be brought to synchronous speed before the load is applied.

A booklet on C-H Magnetic Clutches, published by the Cutler-Hammer Manufacturing Co., illustrates a number of large installations where these clutches have permitted the use of synchronous motors on loads whose starting torque is so high that synchronous motor drives have never been considered practical.

Synchronous Condensers

The use of synchronous condensers for power-factor correction is familiar, but their use for power-factor control is not so well known, although the largest condensers built are applied to this service. The General Electric Company has standardized a complete line of sixty-cycle condensers for power-factor control to meet the demand for a comparatively inexpensive, high speed machine. The machines are of light construction and possess other features which permit a reduction in the amount of material required and they can consequently be produced at a lower cost. Calculations necessary in figuring on a synchronous condenser installation, a wiring diagram, and other data are included in an illustrated bulletin which describes this line of apparatus.

Discussion of the National Electrical Safety Code

The Bureau of Standards, Department of Commerce, has issued a new publication, Handbook No. 4, entitled "Discussion of the National Electrical Safety Code."

The publication contains a discussion of the rules of the National Electrical Safety Code as published in Handbook No. 3. The discussion is intended to give the reasons for inserting some of the rules, to aid in the interpretation of the rules, to give suggestions as to how the rules may be applied and suggestions regarding practice involved in the rules. In the present edition it has been segregated under a separate cover from the rules themselves. This discussion was originally included in Circular No. 54, but has been amplified and considerably extended in scope.

NEW ELECTRICAL and INDUSTRIAL DEVELOPMENTS

(A new range boiler factory, a new veneer mill and irrigation developments are interesting news from the Northwest. An enlargement of the Columbia Steel Company's rolling mill, a new wire mill, several new industrial plants and hydroelectric projects are developments of importance in California. Several power and irrigation projects are proposed for the Intermountain district.—The Editor.)

THE PACIFIC NORTHWEST

TACOMA, WASH.—The Buffelen Lumber & Manufacturing Company is erecting a \$160,000 veneer factory, a \$150,000 power house and a \$50,000 planing mill.

CHELAN, WASH.—The Chelan Electric Company, which supplies water for domestic purposes in Chelan, is now engaged in laying new water mains, at a cost of more than \$100,000. The company turns its excess water over to adjoining orchards for irrigation purposes.

OLYMPIA, WASH.—The act of the last legislature requiring public service corporations to secure certificates of necessity before entering competitive fields will be submitted to a referendum vote, as the requisite number of signatures has been filed with the secretary of state.

RIDGEFIELD, WASH.—The large electrically driven shingle and lumber mill of Bratlie Brothers, Inc., which was forced to suspend operations over a month ago on account of the highest water since 1894, has resumed operations with a full crew, about 40 men. Very little material damage was done to the mill by the water.

CENTRALIA, WASH.—The City Commission has passed a final reading of an ordinance providing for the erection of a \$75,000 plant and office building for Centralia's municipal light department, and authorizing the issuance of bonds to pay for construction. Construction bids will be called as soon as the plans have been completed by the architects.

KLAMATH FALLS, ORE.—The sawmill of George Christie & Sons, known as the Christie Mill, located eight miles west of this city at Long Lake, was destroyed by fire July 12th. The loss is estimated at approximately \$30,000 with about \$10,000 insurance. The lumber yard, containing some 700,000 feet, was saved only after a hard fight by about twenty men.

OLYMPIA, WASH.—Appeal to the Supreme Court of the United States of a suit to test the validity of the new law in this state against alien ownership of land was forecasted when the State Supreme Court, which recently upheld the act, was served with a writ of error. The case was started by Yamshita and others against Secretary of State J. Grant Hinkle.

SEATTLE, WASH.—Reduction in wages of about 20 per cent, 4 per cent less than the cut fixed by coal operators, has been recommended in a report to Edward Clifford, director of the State Department of Labor, by a special committee appointed to suggest means of settling the strike which has closed practically every mine in the state of Washington since March

VANCOUVER, B. C.—The Coast Breweries of California, recently incorporated as an extra-provincial concern with capital of \$250,000, has purchased a site on Granville Island, on which it proposes to erect a brewery plant costing \$150,000. The brewery building will cost \$75,000 and the remainder will be spent in equipment. Capt. John McLellan, Vancouver, represents the firm in Canada.

YAKIMA, WASH.—With the beginning of the government's fiscal year another \$400,000 was available for storage construction at Rimrock, but for the present there will be no increase in the force employed. John Rolfsen, representing

a New York firm, has arrived to superintend work on a hydroelectric plant for which his firm has a contract. Most of the machinery is on the ground and the rest is at Noches City, awaiting transportation to Rimrock. The June payroll includes 325 men and amounts to \$240,000.

OLYMPIA, WASH.—That no irrigation district will be organized to draw water from Rock lake, Whitman county, was the decision made by Dan A. Scott, director of conservation and development, following an investigation by State Engineer Lars Langlow and Marvin Chase, superintendent of hydraulics. The investigation showed that the proposed district would contain 58,300 acres of which only 35,000 was considered suitable for irrigation, while but 10,000 was under gravity flow. Scott said that such a district was not practical. All state lands included in the district were withdrawn by Land Commissioner Clark V. Savidge.

RITZVILLE, WASH.—A petition for the creation of an irrigation district in the southeast part of Adams county has been presented to the county commissioners. The sponsors plan on getting water from Rock lakes and contend that about 35,000 acres in Adams county can be irrigated from this project. Some opposition to the proposed district developed, the state engineers contending that only about 10,000 acres in the district was suitable for irrigation and that this would make the cost of the project too high to be practicable. After hearing both sides, the commissioners took the case under advisement and another hearing will be held July 25th.

SEATTLE, WASH.—The National Steel Construction Company, owned by John Wilson, has established in the company's Duwamish Waterway plant a complete range boiler factory, the first west of the Rocky mountains, it is stated. The plant has capacity of 80 range boilers a day, built especially for the high pressure of the city water systems of the Coast. The plant is located in the company's former steel shipbuilding plant, and equipment has been added to provide a galvanizing plant, steel pickling plant and special boiler manufacturing machinery. The company plans to expand the factory until it is supplying the Northwest markets. In the meantime, the company will continue in the steel construction and shipbuilding industry, handling such contracts as are available in this line.

THE PACIFIC CENTRAL DISTRICT

VISALIA, CAL.—A report is being prepared for the proposed water system for the city of Visalia, to cost \$200,000.

HANFORD, CAL.—The Lacey Milling Company is having its plant greatly enlarged. A spur track is also under construction.

BAKERSFIELD, CAL.—Plans are being prepared for the proposed municipal water system for the city of Bakersfield, estimated cost \$600,000.

MARYSVILLE, CAL.—The substation of the Northern Electric Railroad at East Nicholas, near here, was destroyed by fire July 10th, resulting from a short-circuit. Loss is placed at \$10,000.

OAKLAND, CAL.—The Richardson Welding & Manufacturing Company has moved to the site occupied by the Pacific Coast Shipbuilding Company.

ANGELS CAMP, CAL.—Fire of mysterious origin destroyed the equipment of the Sultana Mining Company, with the exception of the 20-stamp mill, causing a loss of between \$75,000 and \$100,000.

SUSANVILLE, CAL.—The contract for paving the Richmond Road was awarded to the Warren Construction Company by the supervisors. The cost is approximately \$25,000; the distance to be paved about 1,700 feet.

RICHMOND, CAL.—Iron oxide will be manufactured here as soon as a new building at Fifteenth and Chancellor can be completed. The plant is to be operated by a group of chemists formerly in the employ of the West Coast Cal-somine Corporation at Berkeley.

RICHMOND, CAL.—Bids are being received by Architect L. F. Hyde, of Oakland, Cal., for various segregations of the construction of a one-story brick, concrete and glass factory building for the Republic Steel Package Company, to be built at Richmond, Cal.

SAN FRANCISCO, CAL.—The Meyenberg Milk Products Co. has been incorporated with a capital stock of \$200,000 to establish a milk condensing business at Salinas. J. P. Meyenberg, for a number of years manager of the Alpine Evaporated Milk Co. plant at Gonzales, is president of the new company.

FOWLER, CAL.—The Frank H. Buck Co. of San Francisco, and 308 Mattei Building, Fresno, are to build a large green fruit packing house in Fowler. It will be on the railroad reservation adjoining the stockyards and south of the Armstrong warehouse. The building will be 150 by 67 feet, with a 16-foot porch running the full length of the building.

SAN FRANCISCO, CAL.—The California-Oregon Power Company has been granted an increase of 5 to 10 per cent over present schedules by the State Railroad Commission. Over 80 per cent of the power sold in California is delivered under contract to irrigation companies and to other power concerns, it was stated.

CARMICHAEL, CAL.—A committee of six voters is contemplating plans for forming an electric lighting district here. At a mass meeting to be held July 16th a definite plan will be launched. At present the irrigation district receives its power from the Great Western Power Company, but no current lines are nearer than the hop yards, two miles distant.

SAN FRANCISCO, CAL.—The Pacific Gas & Electric Company has given the contract for the forge welded steel pressure pipe for the Pit River No. 1 hydroelectric development to the M. W. Kellogg Company, of New York. The pipe, which will be 9 ft. in diameter at the upper end and 8 ft. in diameter at the lower end, and 1¼ inches thick, is to carry the water to the largest hydraulic turbines yet installed in the West.

REDDING, CAL.—A mortgage for \$10,000,000 was filed for record here on July 10. It was given by the California Oregon Power Company to the Mercantile Trust Company of San Francisco as security for a loan. The mortgage covers all the company's property in Southern Ore-

gon and in Siskiyou, Shasta and Trinity counties in California. The California Oregon's wires extend as far south as Kennett, and as far west as Trinity Center and Carrville.

DIAMOND SPRINGS, CAL.—The box factory of the California Door Company at Diamond Springs, which recently was destroyed by fire, is rapidly being rebuilt in preparation for a heavy winter run of business making box shooks. A carload of new machinery has arrived and is being installed. Enlargements of the mechanical part of the plant call for a 400-horsepower engine which is now being put in place. This plant when running at capacity furnished employment for several hundred men.

MODESTO, CAL.—The Modesto and Turlock irrigation boards at a meeting June 27 completed a contract with the San Francisco Iron and Metal Company, for approximately 500 tons of steel rails for the Don Pedro railroad, to be used in connection with the construction of the Don Pedro dam. The order calls for 56-pound rails, as approved by the Sierra Railroad. The directors practically have decided to carry their own compensation insurance on the project, in view of the fact that it would cost \$75,000 to carry the insurance with the state.

SUTTER CREEK, CAL.—The concrete work at the tailings dam, located one mile west of the Central Eureka Mine, is more than half completed and the work is progressing well. The dam is over 1,000 feet long and has a concrete core with a sand filling above and below. A large crew of men is employed. The completion of the dam will insure safety to farm lands in the valley which heretofore were in constant danger of being damaged by the overflow. The work is being done under the supervision of Albion S. Howe, superintendent of the Central Eureka Mine at Sutter Creek.

PITTSBURG, CAL.—An important improvement in the Columbia Steel Roller Mill has just been made in the installation of a 1500-horsepower Westinghouse motor, built especially for roller mill service. There is said to be no other motor of this type west of Chicago. The cost of installation was \$40,000, and by the use of this motor the 12-inch mill which it drives will be increased in capacity by 30 per cent. A remarkable feature of this motor is that it will stand an overload of 100 per cent for 13 minutes, thus enabling it to handle its work easily.

FRESNO, CAL.—Permit has been granted to the San Joaquin Light & Power Corporation, by the Federal Power Commission, for the following projects: Construction of a diversion dam and tunnel, 8 miles in length, to the proposed Kings River Power House; construction of a diversion dam in Roaring River and a tunnel $2\frac{1}{2}$ miles to power house; construction of a diversion dam in Robbs Creek. All projects are to be on Kings River. The total development will be approximately 100,000 horsepower. One of the projects is below and two are above the proposed development of the city of Los Angeles on Kings River. The lower conflicts with the proposed development of E. B. Whitehall.

THE PACIFIC SOUTHWEST

HERMOSA BEACH, CAL.—Larger water mains and fire plugs are badly needed in this city, which was demonstrated at a recent fire. The board of trustees has the matter under consideration.

LOS ANGELES, CAL.—Under an order handed down by the State Railroad Commission, the Southern California Edison Company has been authorized to expend \$5,058,860.56 of the proceeds of the sale of stock previously authorized to pay for plant extensions, additions and betterments.

ORANGE, CAL.—The California Wire Company, capitalized at \$200,000, expects to begin the manufacture of electric wire and cable Oct.

1st. The purchase of a two and one-half acre site and the purchase of machinery have been authorized.

VENICE, CAL.—Santa Monica's commissioners have received bids for about \$70,000 worth of water pipes for mains and hydrants. The bids have been turned over to the Commissioner for investigation, and the contract will be awarded later.

BALLINGER, TEXAS.—Engineers representing machinery and electrical supply houses are here making the preliminary survey for the city's \$90,000 light and power plant. The bonds, which were voted recently, have been cashed and the city has the money in the bank with which to finance the new improvements.

LONG BEACH, CAL.—The Colonial Chocolate Company, whose plant at 1309-51 West Broadway was destroyed by fire, has taken a five-year lease on the building owned by E. E. Jones at 1181-87 West Ocean Boulevard, which will be completely remodeled and ready for use August 1st. A new 20-ton refrigerating machine will be installed.

SAN PEDRO, CAL.—After many months of negotiations, the agreement between the city and the Salt Lake Railroad over the widening of the main channel was signed by representatives of the railroad and the city. Prompt action in signing the agreement came as the result of the visit of the president of the Union Pacific here last week. The Union Pacific recently purchased the Salt Lake road.

SAN BERNARDINO, CAL.—In preparation to serve Big Bear Lake with electric current for power and lighting, articles of incorporation of the Bear Valley Utility Company were filed recently. The capital stock is \$100,000. The incorporators are B. T. Ergenbright, president; E. E. Richardson, vice-president; E. S. Cole, secretary and treasurer; Frank L. Talmadge, all of Victorville. Mr. Ergenbright has the franchise to construct and operate a power line into Bear Valley. The same line will furnish the power for the operation of the Gold Mountain mills.

SAN DIEGO, CAL.—Under authorization of the state railroad commission, which recently granted application for issuance and sale of bonds to the amount of \$2,750,000 par value, the San Diego Consolidated Gas & Electric Company soon will begin construction work on improvements and extensions on a large scale. Both gas and electric departments will be benefited by the work contemplated. A contract already has been awarded the Standard Iron Works of San Diego for the installation of an additional gas generating plant to cost \$175,000, and the establishment of a complete purifying system. It is planned also to double the capacity of the electric power plant purchased from the Spreckels interests and increase the horsepower to 5,000. Three new, huge boilers will be installed, foundations having already been laid for them. An electric sub-station to cost \$175,000 is another of the improvements contemplated.

THE INTERMOUNTAIN DISTRICT

LOGAN, UTAH.—As a result of a bond election held on June 7th a bond issue of \$600,000 for road improvements has been decided upon. The money will be used for the improvement of roads in Cache county.

OGDEN, UTAH.—Contract for the construction of the new outfall sewer system of Ogden has been awarded to the Security Bridge Company of Billings, Montana. This company submitted the lowest bid, which was \$351,010.58. The Security Bridge Company is ready to begin work immediately. The contract calls for the completion of the work in 400 days.

SALT LAKE CITY, UTAH.—A permit has been issued to Great Basin Power Company for the development of power on the west and

north forks of Duchene River. The power plant will operate under a head of 480 feet and will develop about 4,000 hp.

LEVAN, UTAH.—The Levan town board has signed a contract with the Big Springs Electric Company of Fountain Green to furnish electric power. Work will be commenced very soon on the system, and it is expected that by fall the town will have an up-to-date lighting system and electric power for its various industries.

BOISE, IDAHO.—Contract has been let for the new portion of the Boise High School building. A. S. Whitway of Boise was the successful bidder, at \$205,990, and guaranteeing completion of the work in 240 days. The Pope Electric Company received the contract for wiring, at \$4,823. The bids on heating and ventilation were taken under advisement.

RENO, NEV.—Holding that the Reno Power, Light and Water Company had failed to show that the rates established by the Nevada Public Service were unfair, Federal Judge E. S. Farrington has dismissed a motion to enjoin the commission from enforcing its ruling. The case has been in process of adjudication for more than a year, and relates to water users in Reno and Sparks, and consumers drawing water from the Highland ditch system of the corporation.

SALT LAKE CITY, UTAH.—The Utah Reclamation Company has been incorporated, with the object of developing 630 acres of land lying about five miles west and north from Salt Lake City. The incorporators include A. A. Hinckley, state commissioner of agriculture; B. S. Hinckley, John Sommer of Ogden, and Matthew Baer of Tremonton, Utah, all of whom are directors, and also J. A. Robison of Salt Lake City. The company is capitalized at \$100,000 in \$1 shares.

BUHL, IDA.—The Hagerman irrigation project, known as the Blue Gulch, covering approximately 5,000 acres of land, recently passed under the control of James Bethel of Stanwood, Wash. The transaction involves a consideration of \$250,000 and is being handled by Frank Roles and J. M. Richards of the Pacific agency. W. L. Blackwood of Buhl, who was the principal owner of the project, is accepting some scattered properties in Washington and Oregon as part of the consideration. Water rights for the entire project and the machinery and equipment of the irrigation system are included in the purchase.

SALT LAKE CITY, UTAH.—H. R. Walde, of Salt Lake City, attorney for the Telluride Power Company, has made application to appropriate 100 second-feet of water from the Sevier river, in Sevier county, to be used for producing electric light and propelling machinery in Sevier, Piute, Sanpete, Millard, Beaver, Garfield and Iron counties. The water will be diverted from a point near the Telluride power plant, near Marysville. It is said that the Telluride Power Company is seeking to obtain additional water power to be used in case of an increased demand for electric light and power in the counties named in the application, but that at present the demand is not large enough to warrant immediate development of power sources.

BOISE, IDA.—The Supreme Court of Idaho has handed down an opinion in which it holds the \$2,000,000 bond issue authorized by the electors of Idaho to be legal, and giving the state treasurer permission to proceed with the negotiations for the sale of the bonds, employing, if necessary, a fiscal agent to dispose of them. The bonds are of twenty years' duration and bear interest at 5 per cent. The issue was authorized that necessary funds might be made available for the construction of good roads. An attempt made to sell them in January, 1921, failed because the highest bid was \$84,424 below the par value of the issue. The last legislature appropriated \$98,500 to bring the bonds up to a marketable figure and a case was instituted in the Supreme Court to determine their legality.



VOX POPULI

The following moving epistle was recently received by the manager of an English central station:
MOST IMPORTANT.

The Manager,
Electric Works.

"Confectioner's Shop," 19, — Street.
March 31st, 1921.

Dear Sir, I Happen to live at the above address, and have A place of Business for which I find Rent and Rates are very heavy and I open my Shop all day on A Wednesday Every Week. There is no Half Holiday in my Business. And last night I was Without Light or Fire for A very Long Time, I have no Fire for any purpose Except Electric Light.

How Would you feel if you had been in my place Last Night. The pressure has been very poor for Heating purposes for A good While and Seeing how things are Even now Do you propose to Extend and Try to supply Electric Light and Heat for the new Houses on The Estate before you have Some means of giving A Better Supply to your present Customers. Just Think these matters over please, and I hope you will endeavour to let us have A Better Supply of Electricity and A Reliable Continuity, before you attempt to Supply a New lot of houses. If the Supply is So Feeble Now and Apt to Fail entirely What Would happen if you had more Customers to Supply. Please Try to prevent us being in the Dark in the Shop in Business Hours and Please Do Not Let us Freeze for Want of Electricity.

I hope you Can Manage at all times to let us have enough Electricity To Boil The Kettle. If not You may expect us to Come to Your house to Warm our Selves. See A Light and have A Cup of Warm Tea. There are Five of us here, and So your Family would be A Little Larger if we all come. And So for your Own Comfort Sake Perhaps you will Try Your Best To Comfort us with A good and Constant Supply of Electricity and oblige
Yours Respy.,

Mrs. L.

P.S.—There is plenty of Electricity in the Atmosphere. Get it and Send us plenty please and As Soon as you can Let us have it Cheaper Than it is. God will not Charge you anything at all for the Supply.

* * *

INTELLIGENCE TESTS

The series of questions propounded by Mr. Edison to his would-be employes has become famous overnight, and has met with widespread criticism as being irrelevant or impossible. Now, as for us, we are strongly in favor of plenty of general knowledge, especially for engineers, and suggest that all power company executives administer to their prospective employes a questionnaire somewhat as follows:

1. What is the amateur speed record in roller skating?
2. How many lobsters live in Booth Bay?
3. What is the highest building in Zamboanga?
4. What is the chemical composition of Mulligan stew?
5. How old was Homer when he died?
6. What is the mean temperature of a cup of coffee?
7. Who was the first man to eat pumpkin pie?
8. How many revolutions per minute are made by a dog chasing his tail?

For employes who commute we would suggest that an extra observation and memory test be added as follows:

9. Which shoe do you put on first in the morning?
10. What streets do you cross on the way to work?
11. Where is the nearest fire alarm box to your house?
12. What is printed directly under the name of your morning newspaper?

* * *

The early bird isn't in it any more. It is the electrical expert who catches not only the first worm, but as many worms as he wants. The ten-year-old son of J. H. Siegfried of the Pacific Power & Light Company believes in the electrical labor-saving idea, and when he wants angle worms for bait he inserts two electrical terminals in the ground some distance apart, connects them up and presses the button. The worms, disturbed by new and strange sensations, promptly

seek the upper air, where Siegfried Junior collects them at his leisure. It is reported that a similar method is employed to bring forth from the soil of the Siegfried back yard, nourishment for the Siegfried chickens.

* * *

THE BUDDING SCIENTIST

Q. What is HIO?

A. Idiotic Acid.

An icicle is a piece of stiff water.

Oxygen is used to restore sick people being delivered in cylinders.

An element is a single kind of matter which cannot be separated by human nature.

Iodine occurs in a weed known as fluorspar, which grows in Iceland.

Sodium occurs more in Nature than elsewhere.

* * *

ELECTRICAL HYBRIDS



VII—The Electric Arc-itect

The Arc-itect, though sometimes loud,
Is usually bright,
And on your building problems
He can throw a deal of light.

He has the artist's temperament
And frequently gets hot;
He is brilliant when he's heated
But quite lifeless when he's not.

A McGraw-Hill Publication

Journal of Electricity and Western Industry

25 Cents a Copy

August 1, 1921

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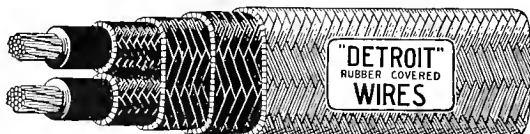
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A semi-monthly chronicle of western events, advocating the economy, efficiency and convenience of electric power for all industries of the West—manufacturing, agricultural, mining, merchandising, home building and home making. Interpreting the value of electrical development to the business and financial man, the industrial man, the power man, wholesaler and retailer, contractor and constructor, engineer and home owner.

Because of the abundance of water power in the West susceptible of economical development, a dependable, uninterrupted supply of cheaper electric power is assured for these industries. The basic industry of the West—hydro-electric power generation—for which Journal of Electricity and Western Industry is the spokesman, is therefore logically and inseparably linked to the growth and prosperity of all phases of our daily life and business.

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THE WEST'S NEWEST HYDROELECTRIC PLANT

WITH the starting up of the new Caribou plant of the Great Western Power Company on Feather River, two 30,000 hp. units were put into service to furnish more power for the growing industrial needs of the central California district. The new installations are the largest capacity impulse type turbines in the world, and operate under a 1008-ft. head. The 165,000-volt transmission line carrying the power some 187 miles to the coast, makes the famous crossing at Carquinez straits in a single span of 4753 feet, the third longest in the world. The picture shows the water shot from the power house just before the giant turbines went into action.

Journal of Electricity and Western Industry

A publication devoted to the upbuilding of the great industrial West and the countries bordering on the Pacific

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Interpreting Western progress through the application of electric power, light, and heat in industry and in the home

Vol. 47, No. 3

SAN FRANCISCO, AUGUST 1, 1921

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DIP THE LIGHTS

A great idea has been suggested in recent weeks, namely, that of dipping the lights throughout the nation at exactly 8 p.m. each evening, thereby enabling every householder to get accurate time in his home. Here is a splendid way whereby the accuracy of time pieces may be improved, and at the same time an impression made on the public mind as to the indispensability of electricity in every home throughout the nation. The New York Times has recently carried three columns devoted to this subject, and much discussion is current in eastern centers. In the West the problem is considerably simplified due to the interconnected systems traversing entire districts equal to combined areas of several eastern states with individual lines, and often running for hundreds of miles under the control of one dispatcher. The idea seems to have unusual merit attached to it, and the good will awakened in the public mind by such a move should not be overlooked.

Unless power users, particularly those operating motors equipped with low voltage cutouts where a drop in voltage would stop the motors, can be protected during the proposed flicker signal, the idea cannot be considered. But the good to be attained by such a move is worth the most serious consideration.

Private Ownership Lives Up to a Responsibility

THE cost of electricity to the average westerner today is about fifty per cent of what it was in 1902—and this despite war increases and the price of oil. This reduction is but the outward mark of an advance in every department of the electrical industry—an advance which may be credited to the enterprise and to the sense of their responsibility to serve displayed by the privately owned public service companies of this region. This has not been wholly a matter of money making. Regulation has forbidden public utilities the right to make exorbitant profits by any means—and reduction in costs means at once reduction in rates. On the other hand, the public service industry is to some extent protected in its return, so that it might have been expected to rest content with somewhat lesser achievements, safe at least from immediate competition.

This has not been the case. 40,000-volt transmission has given way to 60,000, to 110,000 and now to 220,000-volt transmission. Larger and more efficient types of generators, transformers, insulators, pole tops and switches, longer spans and greater transmission distances have been worked out and employed because they mean greater economy of operation, and, in the end, lower rates to the consumer. The employment of this new equipment has often meant the abandonment of less advanced types still capable of many years' use—a loss for which the companies in the past have not always been allowed recompense, so that the company in many cases has

actually stood to lose a considerable income. In every case, however, the forward step has been taken—and the rates reduced.

The subject of long spans and submarine cables which is featured on another page of this issue is but one phase of the quiet and yet daring work which is being continuously carried on by the engineering departments of these companies in the interest of better service at less cost. Some of the engineering accomplishments which have been called forth in this service are recognized as world achievements. That this spirit has been fostered and that these achievements have been made is the greatest possible tribute to the healthy sense of its public responsibility which private ownership in this great industry has developed.

The Importance of the Electric Pump to Agricultural Development

THERE were 88,496 more farms in the United States in 1920 than there were in 1910; there were 105,466 more farms in the Pacific and Mountain states at the end of the same period. In other words, the number of farms in the eastern portion of the United States actually decreased during the past decade, while the West largely extended its acreage, so that the entire increase for the United States may be credited to the country this side of the Rockies. Combine this fact with the striking figures on agricultural growth which are available for one Western state, and it is clear what a master role the electric pump has played in rural development.

Of the one million four hundred thousand acres which were brought under irrigation in California during the ten years from 1910 to 1920, over one million one hundred thousand of them were above the level of gravity irrigation and had to be irrigated by pumping. This represents a little more than one third the entire increase in farms of the entire United States. Utah, Nevada and all the Southwest country, as well as much of Montana and districts of Idaho, Washington and Oregon are dependent upon irrigation for their agricultural development. To the electric pump, in short, is due the greater part of the agricultural development work going on in the country today—and to its services we must look for the growth of the future.

Plans for a Bridge

Across San Francisco Bay

THERE has been much discussion throughout the San Francisco Bay region relative to the bridging of San Francisco Bay. All well-wishers of the West see in this activity one of the most important pieces of work that can be accomplished for the upbuilding of the West. San Francisco, a city of over half a million people, is so isolated from the rest of the world that it has but one outlet to the country and for five hours of the twenty-four-hour period it is cut off from ferry service with the mainland. Needless to say, this situation cannot go on indefinitely, and cities generally throughout the San Francisco Bay region have come to this same conclusion. It would seem that the plans submitted by Messrs. Davies and Modjeski do not entirely meet the situation. Their plans would very effectively solve the automobile situation, but would have practically no effect in improving the commuter situation in cities other than Alameda and Oakland, which after all is a big part of the problem—namely, to make the time from office to home a minimum. Let us hope that the matter will not be dropped here, however, but that earnest consideration will bring forward a solution upon which all can agree.

The West Awaits Intelligent Tariff Legislation

WESTERN farmers have always stood for a reasonable protective tariff, in so far as it is designed to protect legitimate home industries. And their position is a logical one. We are prompt to take measures against child labor and sweat-shop methods in our own country. In effect, the protective tariff is a form of similar legislation, designed to protect the higher standards of living of our own workmen against lower living conditions elsewhere. Italian farm hands get next to nothing for their services and live under conditions which we would not be willing to permit among our working classes; Japanese and Chinese laborers receive the equivalent of a few cents a day and live intolerable lives from a western standpoint. What we are doing in the protective tariff is protesting against these lower standards and raising a dam, as it were, to maintain our own higher level of life.

There is less excuse for the protection of industries which are not a natural growth of this country. Under present still unstable international conditions, there may be some excuse for deliberately fostering an industry which would be essential to national independence in the case of war—but further than that, the interests of the world demand that advantage be taken of varying climates and soils, and of divergent national traits. If the Japanese are expert in the manufacture of Satsuma ware, there seems to be no reason why we should establish a factory here and maintain it at enormous expense by a protective tariff, and if a German genius for toy manufacture produces the best toys, it certainly would be false economy for us to bar them from the country.

There is also another side to the tariff question. Western canned fruits, western wool, western timber and western manufactures, as well as products of eastern mills and factories, demand a foreign market. The effect of confining distribution to home fields is seen in the number of failures which the last year has recorded among the canneries of the West. If there is anything which the post war period has taught, it is that foreign trade is only possible upon the basis of an exchange of products. A creditor nation cannot afford to build up a wall of high tariffs. No foreign country can absorb our goods if it is not allowed to send us others in exchange.

What the West needs is a sane handling of the tariff problem. It is not a question of special interests, western or otherwise,—it is a problem to be handled from the national aspect. And upon an intelligent recognition by Congress of what constitutes national welfare in this respect depends in great part the immediate prosperity of western industry.

Summer Sessions of Electric Clubs

THE development of the electric club throughout the West has been one of the outstanding features of the current year. The Los Angeles Electric Club, which has recently come into existence, now has a membership of about 700. This club recently adjourned for a two months' vacation. The San Francisco Electrical Development League, comprising something like 700 members and now recognized as one of the most powerful bodies for civic betterment in San Francisco, recently put to the vote the question as to whether the League would close its sessions for the summer months. The editor of this journal urged that there be a cessation of activities for the two summer months, following the custom of former years; but the response came back, vigorous and unanimous, calling for a continuation of the sessions, and all statements publicly made were at once retracted. It is with sincere congratulations that the Journal of Electricity and Western Industry commends the League for the evident spirit of enthusiasm that pervades its meetings at the present time. With this enthusiasm maintained, there will be no lull in the fall sessions due to the continued activity during the summer. Indeed, during the summer months many eastern visitors of the

electrical industry appear in San Francisco, and contact with the trade may be greatly forwarded by having these League meetings continued each month during the vacation period. Many trying situations, also, now facing industry as a whole, can be watched more closely during the summer months, with the League meetings in full session.

Sale of Electrical Securities Indicates Mutual Respect

THE unique campaign instituted by men of the electrical industry in the West to forward the sale of electrical securities among members of the electrical industry has proven of great helpfulness. This is true, not because of the volume of sales but rather because of the moral support to the public service industry that such a movement carries with it.

Some time back there was recorded in these columns the gratifying results that were accomplished in San Francisco in sales of this nature. Now comes the news from Los Angeles that the Electric Club of that city has increased the number of men holding electrical securities by over eleven hundred, divided among jobbers, manufacturers and contractor-dealers, representing an investment of nearly two hundred thousand dollars. The Electrical Development Army of Los Angeles which has charge of the drive, is to be congratulated upon this excellent work, and once again is to be recorded in the electrical industry what true cooperation among all branches of that industry can accomplish.

Fitting the Sales Argument to Business Conditions

THE recent convention of the Pacific Coast electrical supply jobbers at Del Monte emphasized in all its aspects the sale of labor saving devices, and it is apparent that plans for the coming year include a special featuring of these lines of equipment. Even in a period of business depression along some lines, they look forward to increased sales of washing machines and vacuum cleaners and similar conveniences of the home.

The psychological reasoning is good—and the electrical appliance is one of the few types of material which should be able to look forward with confidence, irrespective of general financial conditions. The reason for this advantage lies in the peculiar function of this equipment. It is not exactly a necessity—but on the other hand, it is not a luxury. Its peculiar appeal lies in its function of saving—the saving of labor and the saving of money. The housewife who has her washing done by a Scandinavian girl or a Japanese does not buy a washing machine for its beauty, nor even for its convenience, so much as because it is actually cheaper for her to do her own washing in this way or because her wash woman can do so much more in the same time. On the other hand, there are many households which are getting along without servants at all for the first time due to the hard times, as well as others who have given up one or another form of

outside service, such as laundry. It is for such people that the labor-saving argument has its especial appeal.

The Growing Influence of the Realtor

IN forwarding the present movement that is leading men of the industry to organize and cooperate one with the other in the upbuilding of the West, we must not overlook the fact that one of the strongest and most helpful groups of men is to be found among the realtors of the West. Some years ago it not infrequently happened that men engaged in this work were brought into much disfavor on account of unethical real estate deals put across upon the public. But today it is questionable whether there exists a more progressive and ethical group of men than the organized realtors of the West. Take the California Real Estate Association as an example. Here is an association representing approximately 30,000 realtors in the state of California. No one can attend its meetings without being much impressed with the possibilities that lie within the scope of this association. The realtor generally is a wide-awake man of considerable vision, and he is a great factor in state and interstate development. His livelihood depends upon the very development work in which he is engaged. It is no wonder, then, that 30,000 active men, trained talkers and analyzers, are as an organization in a unique position to forward the upbuilding of the West. Something should be done to make a closer tie-in between industry and this powerful body of men, in order to foster a closer cooperative effort between the two groups.

If the Self Interest Story is Good, Tell It to the Wife

ONE of the most successful meetings of the year was recently held by a western electrical organization which carried out a "Tell-it-to-the-Wife" day. The members invited their wives and other prominent women of the community to luncheon, and there told them the story of the convenient convenience outlet, and of the basic role of the power company in western growth. It is safe to say that this was the first time some of the women present had heard either story.

The woman has as much to say as her husband in the forming of public opinion—perhaps more. With few exceptions, such as collars and tobacco (such distinctions are fast disappearing), she is the largest ultimate consumer of manufactured products, and the person most concerned with the industrial growth which will provide them for her. Certainly she is the interested party in all questions which concern the convenience of the home. It might perhaps be too much to suppose that the wives of all electrical men were interested in the welfare of the electrical industry because their husbands were thus employed—but every woman of them is interested from her own "self-interest" angle. Tell the story to the wife. From the hen up, the feminine gender is famous for its advertising powers.

Western Comment on Current Events

Editorial Notes and Readers' Views on the Outstanding Aspects of Financing, Trade Promotion, Legislative and Associated Topics that have a Special Bearing on Western Business

Los Angeles Power Plans Criticized by Interior Cities

Intercounties Committee Protests Diversion of Power from Other Sections of the State For Los Angeles Use

The recent decision of the United States District Court which grants the City of Los Angeles the right to condemn the Owens River Gorge property of the Southern Sierras Power Company, fixing the price at \$525,000, has been appealed and is now before the higher court for reconsideration. The contention of the power company is that the water rights in question are necessary to its further development to serve the needs of Riverside, Redlands, San Bernardino and Imperial Valley towns. The combined interests of these communities have now entered the discussion and it is reported that Riverside is to intervene in the suit. Much publicity has been given to a protest made by the chairman of the so-called Intercounties Committee of California in which he alleges that Los Angeles is endeavoring to dominate the industries of the central and southern valleys of the state through control of the power sources which must serve their needs.

It would seem that there is something in the allegation, although perhaps the published accounts savor a little too much of newspaper sensationalism. Certain it is that a few months ago Los Angeles was filing on all the available power sites in the National Parks as far north as Yosemite Valley. When that plan was frustrated through a burst of popular indignation, the result was merely to change the filings to certain other power sites a little less in the public eye. The former question involved was whether the public could afford to allow the control of power needed for state development to pass into the hands of any one city. Apparently that point is still involved. There is no question of the right, although there may be some of the advisability, of a city developing power for its own use. But it is a grave question whether the rights of other communities to their own independent power service, whether through their own development or through service from a private company, is not equally established. And when it comes to the generation of power by a municipality beyond the needs of the individual city for the purpose of selling that power to other communities and agricultural districts, a very grave danger is apparent. The entire West is interested in the principles involved in the Los Ange-

les suit. If Los Angeles is going into the commercial power business, much as it might open a hotel or a grocery store in some other community, for the profit involved, concerted action should be taken against such a step. If it does not contemplate such action, in the interests of its good name, it should explain its intentions.

What Makes Western Utilities a Good Investment

Wall Street Journal Names Securities of Two Western Utilities Among the Five Leaders with Attractive Market Possibilities

In commenting upon the public utility situation, William J. Keary in the Wall Street Journal brings out the fact that no type of enterprise suffered more severely as the result of the economic disturbances of the war than the public utility; while industrial corporations could increase prices with the increase in the cost of production, public utility rates have been controlled by regulatory bodies that acted more with an eye to politics than from the standpoint of elementary justice.

"Undoubtedly the public had an opportunity during the war to learn as never before how vitally necessary to industry and to the convenience and comfort of man is the service rendered by the public utility. Slowly it came to realize that if a business is to render the most efficient service it must have a chance to exist and have a square deal."

"Public utility securities have already begun to discount the increasingly favorable outlook, but most of them are yet obtainable at bargain levels."

Five of the most prominent companies are discussed in detail and the first two to be considered are the Pacific Gas & Electric Company and the Montana Power Company. Of the first he says:

"Pacific Gas & Electric is one of the largest public utility properties in the United States. It is among the few strongest, if not actually the strongest, public utility corporations viewed from the standpoint of the character of its business, the excellence of the territory it serves, its record during the trying period of the war and its financial position. * * * If bought at present prices, the common stock offers a nice return and seems to have good long pull possibilities. The regulatory authorities are fair minded in their treatment of the utilities and allow rates that will give a return of 8% on the investment. California is a growing state with a diversification of industries that will make increasing demands for power. With business enhancing, costs decreasing, and public good will in its favor, all signs point to greater earning power for the Pacific Gas & Electric."

In referring to the Montana Power Company, which he characterizes as a tower of strength among the utilities, he says:

"It has taken advantage of the water power resources of its territory, and accordingly has little to worry about in

rising prices for coal and oil. Despite the depression existing in the mining districts in Montana, which are served by the company * * * the gross earnings for 1920 were the highest in the company's history. * * * Fortunately for the company, its activities embrace the principal agricultural and timber sections as well as most of the large towns and, therefore, it does not feel acutely the unfavorable situation in the mining industry. Then the company has a 99-year contract with the St. Paul Railroad to furnish the power necessary for its electrified track, which adds to the stability of its earning power. * * * At its present price of 53, the stock gives a yield of 5.6%. Obviously it is selling in anticipation of an increase in the dividend rate, as a yield of 6% cannot be considered highly satisfactory for a stock of this class."

The article goes into more detail regarding these two Western properties, and is evidently written after a careful analysis of the public utility situation throughout the country.

San Francisco Building Strike Nears Favorable End

American Plan Probable Outcome of Building Deadlock in San Francisco and Vicinity

Latest reports would indicate that a 7½ per cent wage reduction and the American plan will be the basis for the final settlement of the San Francisco building strike. Alameda county unions have already accepted these terms and in San Francisco there are 4,000 men at work and 1200 building jobs under way. An industrial association has been formed which has pledged \$1,300,000 to place the present movement toward the American plan on a permanent basis. This organization states that its aim is not the destruction of the union, but that agreements will be made only with individual employees, there shall be no restriction of output and the eight-hour day shall be observed as the basis for wages.

Reclamation Projects to Stimulate Utah Growth

Former Governor Predicts Prompt Action by Congress on Bills Providing Quarter Billion for Western Development

The possibility of further government support for western reclamation projects is one of the major elements determining the growth of this region along all lines of industrial as well as agricultural development. That Congress was prepared to take prompt action which would insure the expenditure of large sums of money for this purpose in the near future is the prediction of former Governor William Spry of Utah, now commissioner of the general land office at Washington, D. C. The statement was made during a recent visit to Salt Lake City for a series of conferences on matters related to the administration of the vast public domain over which he is now presiding.

Commissioner Spry said:

"With the determination by the present special session of Congress of the pressing problems of the tariff and of taxation the way will be cleared for action on irrigation and

reclamation measures of vast importance to the West, and the probabilities are that the Smith-McNary bill, calling for the appropriation of \$250,000,000 for such vital undertakings will be approved."

Commissioner Spry emphasized the importance of taking up reclamation enterprises in the West by saying:

"We must devote our energies to the upbuilding of the country, to the development of the interior, and through public works to that end we can provide employment, add vastly to the wealth producing possibilities of the country, and better the general economic conditions in a most wholesome way.

"It is probable that both committees in the house and senate will favorably report the Smith-McNary bill to provide funds for essential reclamation work, and if so Utah, Idaho and other western states will of course receive ample proportions of the money which would be provided.

"No good purpose can be gained by failing to face frankly the fact that business is poor in almost all parts of the country, though Utah is in a much better position than many other states. And it is probably only fair to say that perhaps the bottom has not yet been reached. But as soon as congress fixes the tariff and determines both the amount and the nature of the taxes to be levied, progress is certain.

"We can confidently look forward to an order bringing into use of vast reaches of now unproductive lands through the medium of government irrigation and reclamation undertakings."

State Extravagance Hampers Industrial Enterprise

Leader of Industry in the West Protests Against High Tax Rates Due to Unwarranted State Expenditure

Wigginton E. Creed, president of the Pacific Gas & Electric Company and of the Columbia Steel Company, as well as a director and owner of many of the industrial activities of the West, in an interview with a representative of the Journal of Electricity and Western Industry, has forcibly backed up his statement made at the recent Pacific Coast Industrial Conference held under the auspices of the Pacific Coast Section, N. E. L. A. at Del Monte. Mr. Creed is profoundly impressed with the extravagance of our present state government, and in part said as follows:

"One thing the investor is interested in and that is the attitude of government toward industry. This is a national issue as well as a state issue. The national government is proceeding intelligently, but I want to say here just as I said in Sacramento, that the greatest economic crime any state government can commit is to indulge in the kind of economic thinking our state government has been following. The total state appropriations for California for the next two years which have been checked by the Comptroller to date,—they are not all in—amount to \$91,120,000. Two years ago the state budget was forty-seven million, the appropriations five million, a total tax bill of \$52,000,000. Our state government in times like these, when the very economic heavens cry out not to do it, has sanctioned total appropriations of more than ninety-one million dollars for the next two years. The estimated revenue available for the same period is eighty-three million dollars plus an accumulated surplus of six million dollars, so that there is a constructive deficit of a little over two million dollars today. This thing has been done, at a time when economy is being practiced by every sound, sane thinking man in the state of California. I make no apology for criticizing. I am not in politics and no company I am connected with ever will be in politics, but I will continue to assert and exercise my right to say what I think of that sort of public policy and to tell the people of this state the economic crime committed against them by that sort of governmental action."



The transmission lines that connect the great water power sources of the West with the industrial and agricultural centers, have involved many notable engineering feats, on account of both the great distances to be traversed and the varied difficulties presented by mountains, desert and waterways.

Handling the Long Spans on Western Transmission Lines

Special Problems of Line Construction and Engineering Method Required by Western Conditions in Bringing Hydroelectric Power from Mountain Sources for the Service of Industry

Those whose school days came in the string-telephone era, before the development of amateur wireless sets, are probably fully acquainted with the difficulties of running wires from one window to another,—across a vacant lot, a grove of trees and the gables of a couple of houses. Anyone who has climbed up a rain pipe with a string tied to his ankle, or hung head downwards from a window to catch a line thrown up from below, will look with wholesome respect at the great spans of the western hydroelectric transmission lines, strung across wide rivers, snow-covered mountains, and deep, precipitous canyons. We are accustomed to take these engineering feats very much for granted—except on one or two occasions when we hear that a world's record has been broken—and only the initiated few realize fully the difficulties and dangers involved in constructing some parts of a transmission line.

The normal spacing between the towers on a transmission line ranges from about 500 to 800 feet, but sometimes it is necessary to swing the line across a canyon in a single span of over 2,000 feet from tower to tower. The canyon may be a thousand feet deep, with rocky precipices for walls, and a roaring mountain stream at the bottom. To cross from one side to the other it may be necessary to fell trees and cut a path through tangled brush—in fact, the clearing of the right-of-way for a transmission line in the West often has all the local color of pioneering in the wilderness.

A steel conductor some three-quarters of an inch thick cannot be shot across a canyon on the end of

an arrow, or fastened around the waist of a human fly and dragged up a cliff. It is necessary to run a hemp or light steel line over the tower to which the heavy wire is to be attached, sometimes using an intermediate line slightly heavier, and then pull up the wire to its proper tension.

In crossing a canyon floor, the reel on which the wire is wound is usually mounted on skids for hauling over the rough ground, the Great Western Power Company of California having developed a special machine for this purpose. The light line is carried up to the high point on the canyon wall where the tower is located, and hauled usually by horses until the main wire is raised up to the desired position. In isolated spots it is not practicable to employ electric power for hoisting, and if the pull is excessive for the number of horses available, blocks are used to increase the pulling capacity.

Record Spans at Carquinez Straits

The present western records for aerial spans are held by the two great crossings at Carquinez Straits, California, that of the Pacific Gas & Electric Company, constructed in 1901, 4427 feet long, and that of the Great Western Power Company, completed in 1920, 4753 feet. The first carries current at 60,000 volts, the second at 165,000 volts. There are special difficulties involved in the construction of such spans as these, not only on account of the tremendous weight of cable, but on account of the location, with all its complications of tide and traffic. The waters of the San Joaquin and Sacramento riv-

ers flow through this comparatively narrow channel, and, combined with the ocean tides, make a heavy and dangerous current. The resultant conditions render a submarine crossing at this point impracticable for a high tension line, owing to the excessive wear and tear involved in the combination of strong currents and rocky bottom.

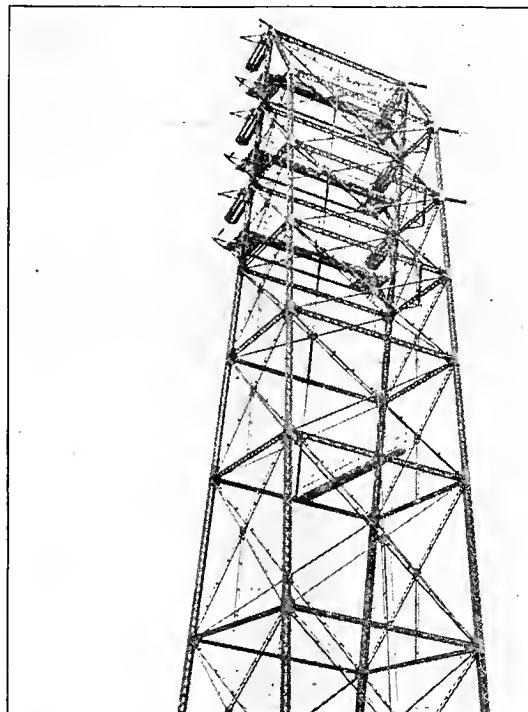
Difficulties of Tide and Traffic

Even the aerial cable, however, is laid through the water at first, and on this account the work has to be done exactly at "slack water," in the brief period at low tide or high tide when the current is negligible. One end of the cable is made fast to its permanent anchorage on the tower, and the remainder, still wound on the reel—and weighing some 12,000 pounds—is loaded on to a barge. Exactly at slack water the barge is towed across the strait and the cable paid out. Wooden brakes used on the reel to control its revolutions, frequently set up such tremendous friction as to make fire imminent, and necessitate a supply of water conveniently at hand.

The slack water period lasts less than half an hour, with the result that this part of the work must be started exactly at the proper moment and carried through with the utmost dispatch. Any hitch will mean a delay of from six to twelve hours, until the next low or high tide.

Besides the tide there is traffic to be reckoned with. There is more or less constant navigation through the Carquinez straits, and the company stringing its transmission cables has no right to obstruct the passage even temporarily. When the line has been dropped across the channel, and the surplus coiled in a figure-eight on an improvised wharf, the process of drawing it taut cannot always be started immediately. The deepest water in the straits is about 120 feet, and in order that traffic may pass, the cable must be a certain distance either above or below the water surface at the navigable part of the channel. Lookouts must be posted, and every stage of the work carefully timed. The final clearance required is 206 feet above the high tide water surface. The stringing of any one of these cables involves three or four days' work, and as there are six on each of the two lines that make this crossing, the task is an extensive one.

In anchoring the cable to the second tower, a light line is used as in the case of the canyon spans, but the pulling is done by a hoisting engine. When the cables are drawn up to their proper position, the pull on each is over 20,000 lbs. Thus not only is a special type of tower construction required for these

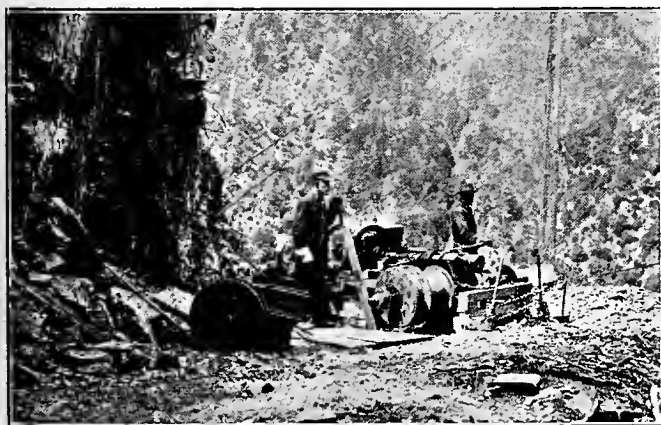


A western record in aerial spans. Upper section of one of the towers at the Carquinez crossing of the Great Western Power Company of California.

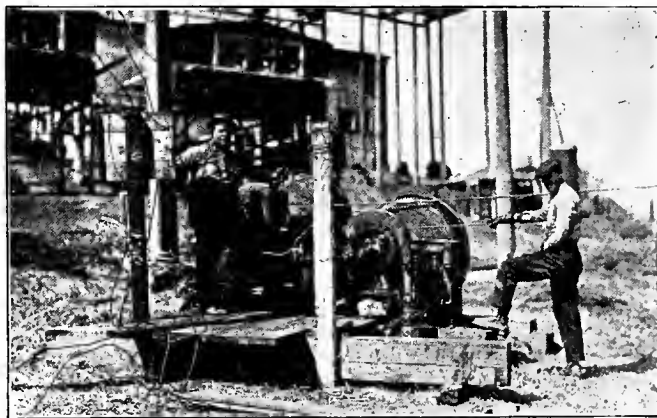
great spans, but also a special insulator arrangement with sufficient mechanical strength to withstand the excessive strain.

World Records

The other famous spans in the United States—the only ones in the world which surpass the Carquinez crossings—are those of the Shawinigan Water & Power Company and the Knoxville Power Company. The first crosses the St. Lawrence River in a single sweep of 4801 feet; the other, a world's record, stretches across the Little Tennessee River Gorge, 5010 feet from tower to tower, operating at 150,000 volts.



Special machine developed by the Great Western Power Company for unwinding conductors to be strung across a canyon.



Hoisting cable across the Carquinez Straits, Pacific Gas & Electric Company. Note the telephone receiver attached to one of the workers.

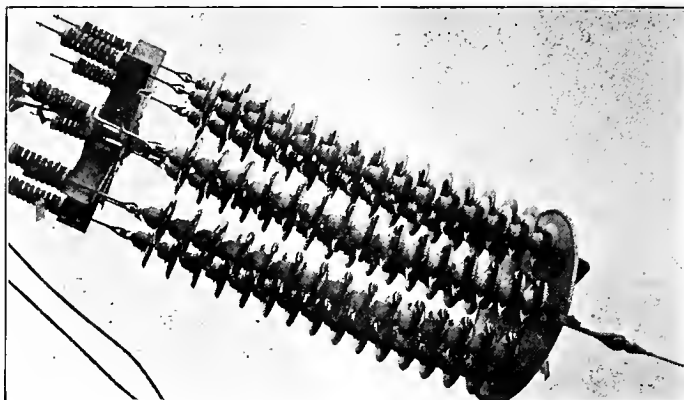
Spectacular engineering feats have necessarily played a notable part in western electrical development, both on account of the great distances to be covered in the transmission of hydroelectric power, and the many problems involved in water power development in rugged and mountainous country. The Carquinez spans rank, together with record dams, high voltage lines, and large-scale water storage, among the many achievements which the West owes to the courage and resourcefulness of its engineers.

GREAT WESTERN POWER COMPANY

BY JOHN A. KOONTZ
Electrical Engineer

When it was necessary for the Great Western Power Company to bring additional power from the Feather River into the bay district, it seemed advisable to come in from the north and cross the Carquinez Straits with a 165,000-volt line. This span crossing the Straits is 4753 ft. in length and is supported on double circuit steel towers. The towers are in duplicate, each being 195 ft. in height and carrying 6 wires, three on either side; the wire spacing being 20 ft. in the vertical and 35 ft. between circuits, each tower containing 153,300 lbs. of steel.

Because of the ease for testing and making replacements or renewals, the insulators were made up of modern 10-in. suspension units. The dead-end insulator is composed of 8 strings of 10-in. disc



Insulator arrangement on 4753-ft. Carquinez crossing of Great Western Power Company

units, each string consisting of 15 elements. These 8 strings are attached at each end to a steel spider, which in turn is attached on the one end through eye bolts and cable to the conductor, and through eye bolts on the opposite end to the tower. On the tower end, the individual strings are fastened to an eye bolt, this eye bolt running through a coil spring which comes in compression against the steel spider on the tower end of the insulator. These eye bolts are threaded, and by proper adjustment of the attached collars, the spring tension can be so adjusted as to equalize the load on all 8 strings. The springs used in this work were all carefully tested, and only springs having the same length and compression characteristics were used on the same conductor, so that with careful measurement of the spring length, there is no difficulty in knowing that the various strings are carrying their proper proportion of the

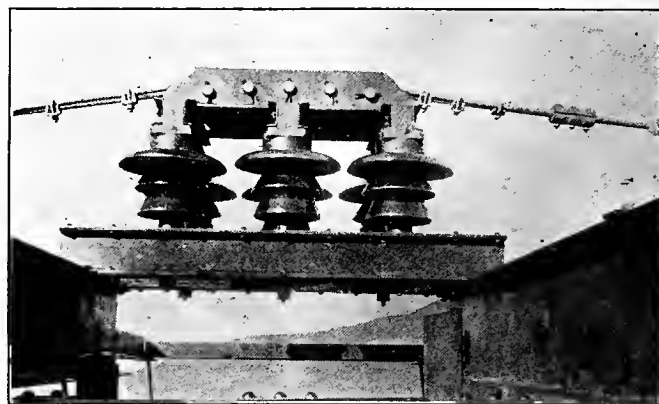
load. This total load per conductor support varies from 16,000 to 20,000 lbs., depending on wind conditions.

The conductor is a 61 strand cable, consisting of 37 strands of double galvanized plow steel and 24 strands of aluminum, the aluminum forming the outer layer of the cable.

PACIFIC GAS & ELECTRIC COMPANY

BY E. H. STEELE
Engineer of Line Construction

In the pioneer days of power development, the Bay Counties Power Company built what is now known on the Pacific Gas & Electric Company system as the two Bay Lines from Colgate power house



Insulated saddle carrying cable on Pacific Gas & Electric Company's Carquinez towers

to Oakland, a distance of 146 miles, and at that time (which was in the year 1901) was the longest transmission line, when completed, in existence.

The most formidable obstacle in the physical construction of this line was the waterway in general known as San Francisco Bay, which in bringing power from the north, either reaching Oakland or San Francisco, had to be crossed. It was impossible at the high voltages which were required for transmission purposes to carry this power across the bay in a submarine cable. It was, therefore, determined to make an aerial crossing at Carquinez Straits.

The total length of this span from anchorage to anchorage is 6,440 feet. The cables at either end are anchored into a heavy mass of concrete. The line is separated from the ground through very heavy strain insulators, oil insulated, of special design. These insulators have been in service since the original construction in 1901 and have never during the twenty years of service given any trouble.

There are three steel towers in the length of this span which are used under this construction as rider towers only, the permanent anchorage, as described above, being directly to the ground. These towers are known as South, North, and the Leaning Tower. The South Tower and Leaning Tower are approximately 75 feet in height. The North Tower is 225 feet in height. The conductors which were originally four in number (one complete circuit with one spare cable measures $\frac{7}{8}$ -in. in diameter), are made of 15 strands of plow steel wire having a breaking tensile strength of 200,000 pounds per square inch. The

cables are galvanized. However, for further precautions against rust, these cables are cleaned and painted every third to fourth year. The actual tension to which these cables are pulled is approximately eleven tons, or 22,000 pounds each. About seven years ago two more cables were added to the original construction.

The insulating supports on the towers are made up of nine ordinary 14-inch, four part, pin type insulators for each cable, of standard make, the insulators placed in multiple so as to minimize the strains on each individual unit. The pedestal which is constructed to equalize this load on all the units and which carries the cable directly, is provided with a series of small rollers which permit the cable to travel at the bearing points in order to compensate for the differences in the lengths of the cable between supports, due to contraction and expansion. The length of span between what is known as the North and South Tower (these towers being adjacent to the waterway), is approximately 4400 feet.

PACIFIC POWER & LIGHT COMPANY

(From data supplied by H. H. Schoolfield, Chief Engineer.)

All the exceptional spans on the lines of the Pacific Power & Light Company, Portland, Ore., are over navigable streams and therefore require construction providing for clearance for boat masts. With possibly one exception none of these crossings is subject to ice loading, but all must withstand heavy wind pressures. On one of the crossings some trouble was experienced when solid conductors failed due to crystallization at the insulators caused by



Columbia river span of the Pacific Power & Light Company, length 1994 ft.

wind vibration. This was eliminated by installing stranded cable.

Following is a tabulation of a number of the company's longer span river crossings.

Stream Crossed	Voltage of	Length of	Crossing			Towers
	Circuit		No.	Kind	Height, ft.	
A—Lewis & Clark River	25000	1611	2	Wood	135	
B—Columbia River						
Hood River	66000	1994-625	3	Steel	95-220-58	
C—Snake River	66000	1558-600-500	4	Steel	135-35	
D—Columbia River						
Pasco	66000	1191-1677	3	Steel	153	
E—Columbia River						
Richland	66000	1413	2	Wood	70-110	
F—Columbia River						
Hanford	6600	1240-1454	3	Wood	60	
G—Columbia River						
Beverly	6600	1944	2	Wood	50-70	

PUGET SOUND POWER & LIGHT COMPANY

(From data supplied by M. T. Crawford, Superintendent of Distribution)

The longest spans on the Puget Sound Power & Light lines are the Tolt River crossing, 1069 ft.; the Raging River crossing, 950 ft., and the 980-ft. spans



Tolt River crossing of Puget Sound Power & Light Company, span length 1069 feet, duplicate lines, bare solid copper wire.

near Fall City. All sags are pulled up to within elastic limit at 0° F., 8 lbs. wind pressure, and 1/2-inch ice.

The company has on its lines a number of submarine cable crossings operating at 13,800 volts across various waterways in Seattle. The longest of these is 680 ft. Standard specifications are 250,000 C.M., 3 conductor, 21/64-in. rubber insulation on each conductor, 1/8 lead and steel armor over all.

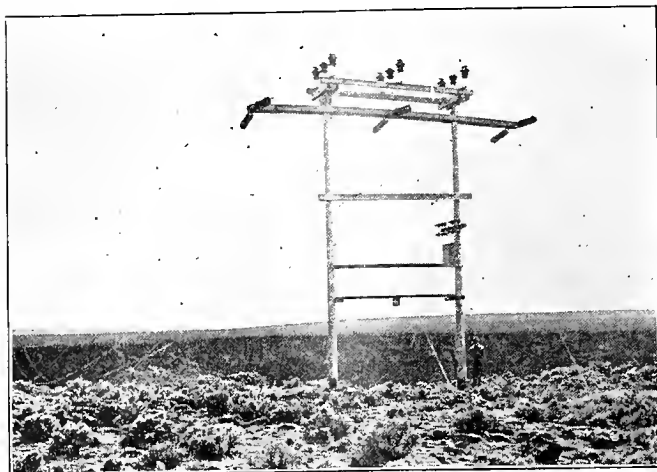
IDAHO POWER COMPANY

BY C. O. CRANE
Engineer

The construction of the high tension transmission system of the Idaho Power Company was commenced in the fall of 1908, when the Emmett-Weiser 66-kv. line was built. On this line there were six long spans ranging from 550 to 1113 feet.

The tower shown in the illustration is the type used on the Thousand Springs-Jarbridge line. This tower has a rotary sectionalizing switch mounted on top. The poles are set on 15' 6" centers. The conductors are dead ended on two 5 3/4" x 7 3/4" x 32' cross-arms by means of a string of seven disc insulators, spacing of conductors being 15' 6". The cantilever sections of the cross-arms are reinforced by a 7 3/4" x 6 1/2" x 7' 9" truss block which is bolted between the arms. There are nine long spans on the line, ranging from 1037 to 1590 feet. The span shown in the picture is across the Salmon Falls River Canyon near Castleford, Idaho. The canyon at this point is approximately 400 feet deep. The span between towers is 1590 feet.

On the Thousand Springs-Caldwell 132-kv. line, the poles are set 14 feet on centers. The conductors are spaced 14 feet on centers and dead ended on two 5 3/4" x 7 3/4" x 20' 0" cross-arms by means of two strings of 11 disc insulators. The two strings of disc insulators are connected together at both ends of the strings by means of equalizer yokes. The cantilever sections of the cross-arms are reinforced by a 7" x 7 3/4" x 6' 6" truss block which is bolted between the



A 1590-ft. span on the Thousand Springs-Jarbridge line of the Idaho Power Company

arms. There are seven long spans on the line, ranging from 640 to 1340 feet. The conductor used on this line is a 7 strand steel reinforced 4/0 cable. At all dead ends the steel core is separately clamped to the dead end clamp in such a way that the steel core takes the strain instead of the aluminum.

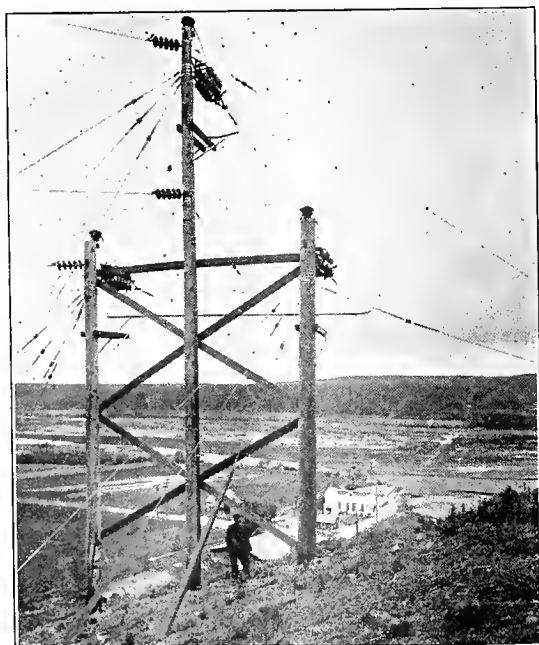
SAN DIEGO CONSOLIDATED GAS & ELECTRIC COMPANY

BY L. M. KLAUBER
General Superintendent

The San Diego Consolidated Gas & Electric Company ordinarily divides long spans into three classes: spans of from 1000 to 1500 feet, 1500 to 2500 feet, and 2500 feet up.

For the purpose of simplification in writing orders and otherwise discussing construction, type letters have been assigned to the various standard forms of anchor towers used. These are as follows:

Type T: Two-pole structure without cross bracing for spans of from 1000 to 1500 feet.



The longest span on the lines of the San Diego Consolidated Gas & Electric Company, stretching 3069 feet across the San Diego River at Mission Valley, with a tension of 8750 pounds in each conductor. Owing to easement difficulties, full advantage could not be taken of the high hills at the sides of the valley, and consequently the span is unusually flat.

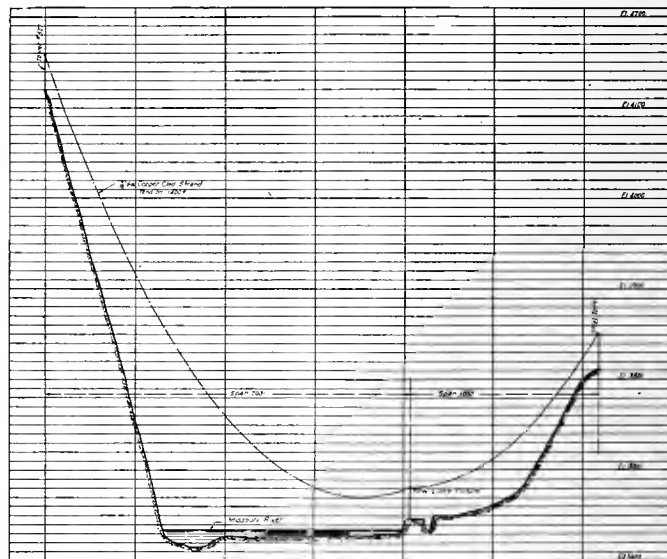
- Type U: Two-pole structure with cross bracing for spans of from 1500 to 2500 feet, where the adjacent span is less than 1500 feet.
- Type V: Two-pole structure with cross bracing for spans of from 1500 to 2500 feet, where the adjacent span likewise exceeds 1500 feet.
- Type S: Three-pole structures for spans exceeding 2500 feet.

The insulators at Type T towers are single strings; at Type U or V structures there are parallel strings, and at Type S structures quadruple strings. Strains are balanced between parallel strings by suitable strain yokes.

MONTANA POWER COMPANY

BY A. C. PRATT
Engineering Department

The Montana Power Company's most interesting span is that crossing the Missouri River near Eldorado Bar. Originally the span had a horizontal length of 3,091 feet, and the reconstructed span has practically the same length but has a steady fixture 2,031 feet from one end of the original span. The original spans were in duplicate with one spare wire



Transmission span over the Missouri River on the Rainbow-Butte line of the Montana Power Company, as modified two or three years ago.

for each; that is, there were eight wires strung from standard transmission towers on twenty-one foot centers instead of ten foot six inch centers, using one standard tower for each two conductors. The transmission lines were rated 15,000 kw. each at 100,000 volts.

In the course of time additional plants were connected until it developed that in case of a ground or short circuit on this transmission line, sufficient current was passed through the span to cause the wires to sag approximately 140 additional feet into the river. This occurred on two separate occasions. On one occasion the wire imbedded itself about 12 in. in the ice and froze in. On the other occasion it went into the water, and on subsequently cooling was raised about 40 feet from the water so as to allow a resumption of service. The steel wire was replaced with 7/16-in., 40% copper clad conductor, and the steady towers were added so as to prevent undesirable swinging in the wind.

Workings of the Farm Settlement System in California

The Constructive Form of Farmer Aid Worked Out by California in its Delhi Settlement Helps Solve Land Speculator Evil and Assists in Permanent Development of the West

BY ELWOOD MEAD

Chairman, Land Settlement Board of the State of California

In private colonization, the settler makes the heaviest payments at first when the earning power of the land is least. Under the state settlement plan as administered by the Land Settlement Board of the state of California, the payments are amortized so that the payments on principal at first are very small and progressively increase. This is more nearly in accord with the farm's earning power than in the private plan. Private colonization requires land to be paid for in from 5 to 10 years. It is impossible to pay for land in this time, and the result is a tragic percentage of failures. People who lose the savings of years go out impoverished and embittered.

Long Time Payments

The settler under the state contract only has to pay 6% a year on his debt. That pays it off in 36½ years, principal and interest. The purchaser under private contract has to pay 6% straight interest and 1/10 of the principal besides.

These long time payments of ours are copied from European and Australian practice. In Ireland, the settler is given 68 years' time, in Denmark, 50 to 75 years, in Germany, 50 years, and in Australia from 31 to 36 years. They are given that long time because experience has shown that it takes that much time to earn the money out of the land. Private enterprise ignores conditions because it makes a more rosy prospect to tell a buyer that he can pay off in 5 years. One system is honest and the other is a fraud, and it is a peculiarly obnoxious fraud because it betrays the kind of development of the kind of people that ought to be protected.

The long time payment of the state enables the money to be earned out of the land, and still gives settlers an opportunity to send their children to school, wear decent clothes, and be free from anxiety.

The state helps settlers organize to cooperate, and thus enables them to buy material used in houses and in equipping farms at wholesale. Private enterprise, with rare exceptions, leaves each settler to shift for himself. The result is that he is penalized by high prices at a time when it bears most hardly upon him.

The Land-Speculation Evil

The social life of the state settlements, however, has a value that has not been fully recognized. During the last century land settlement in this country has been speculative. People rarely buy a farm with the idea of living on it for a lifetime and then having it the home of their children and children's children. They expect to sell out and move on as soon as land values rise; they are indifferent about neighbors or community life.

We must create in this country a community spirit to end the speculative spirit. When I was in Australia, very few Americans who came there bought farms because they were required to live on them eight months in the year for at least twelve years. One and all said they had come over for a quick turn. They didn't propose to stay. In our Durham and Delhi settlements we are continually having requests from people who want to buy farms without living on them, and who are asking what we think the land will be worth when it is developed, and whether they will be allowed to sell. We have had opposition to the enforcement of the clause requiring residence to be established within six months by people who state in their application they wanted the farm for their own use, and who knew that their application meant taking it away from some one else who would live on it. That migratory speculative poison must in some way be driven out of American rural development.

The Social Stimulus

The speculative opportunity in land buying does not exist today. Land prices are higher than they should be. There are few sections of this country where farms are earning interest on the existing price. The discontent of the land-owning farmer shows that industry and effort in farming do not pay as well as in other lines. To earn the money needed to buy a farm is, therefore, a long and difficult undertaking. It requires a persistence and economy and self-denial so unusual that few people have the qualities to succeed in the undertaking unless their morale can be strengthened by a community spirit and encouragement. That is what the state land settlements give and that is where private colonization fails.

The cooperative stock breeders' association, co-operative milk selling, cooperative buying, and co-operative social activities keep up the courage and hope of state settlers. They are engaged in a common adventure, in close personal contact with each other.

In the last 20 years the movement of well-to-do farmers into towns, and the buying of farms by city people as an investment, is causing a deplorable social separation in country neighborhoods. The non-resident owner, the tenant, and the farm laborer each have a different social status. Not only is the struggle to get on in the world being made much harder, but the native values of rural life which are needed to make it a training school for democracy are being sacrificed. The people of California who live in the country are beginning to realize this.

Farm Savings Are Made Possible by the Use of Electricity

Facts and Figures on Comparative Costs and Farm Economies Effected by Electricity in Western Agriculture. What One Three-Horsepower Motor Accomplishes on a Colorado Ranch

BY REGINALD TRAUTSCHOLD
Engineer, The Society for Electrical Development, Inc.

Nearly half of all industrial power is now electric, and very nearly all industrial lighting. In the case of the farms, on the other hand, it is estimated that not more than 7 per cent of them are provided with electric light and power, and this despite the fact that as recently as 1917 about 35 per cent more power was used in farming than in manufacturing. More than half the farm power, furthermore, was then furnished by animals—a good horse being rated at 7/10 horsepower—able to develop their full quota not more than a few hours each day. These general and to some perhaps apparently irrelevant statistics are advanced simply to bring out the very decided backwardness of the farmer in adopting the service which has been so largely responsible for the tremendous strides made in manufacturing lines.

It would require some decided stretch of the imagination to picture animal power operating the water supply system of a factory, and turning the various mechanisms employed in fabricating the product, while the establishment was lighted by oil lamps; but would such a condition really be very different from the very general failure to use electricity on the farm for lighting, running separators and churns, pumping water, turning the much-used grindstones, and for the numerous household appliances—washing machines, vacuum cleaners, flat-irons, electric fans—which are just as desirable on the farm as in more thickly populated communities? Seven per cent of the six and a half million farms in the country today have found this to be true, for in not a single case in which electricity has been rationally made use of on the farm has it proved anything but highly effective, economical and actually essential from the standpoint of efficient and low cost farming.

It is generally conceded that a good horse can do seven times as much work as the hired man on the farm, but the horse has a working capacity of about 1/2 a kilowatt—the electrical unit for power with which nearly all are now familiar and by which

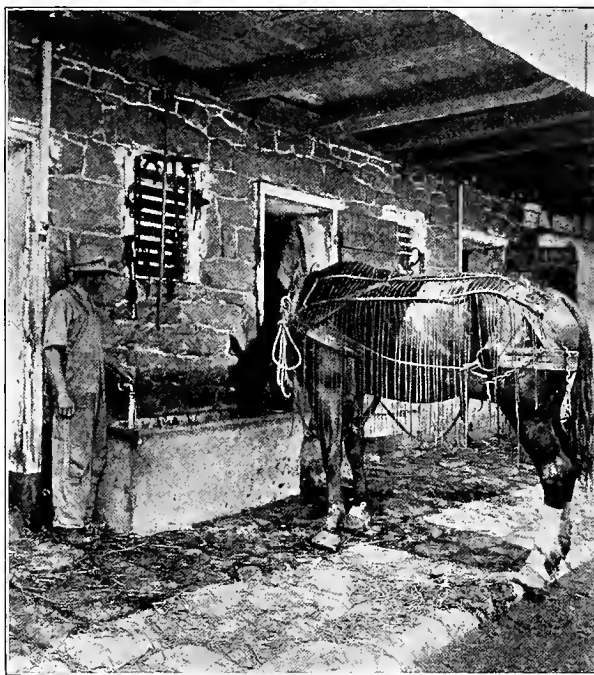
its consumption is measured. Furthermore, the horse will not deliver the 1/2 kilowatt of work for more than an equivalent of three hours in a twelve-hour day. The electric motor, on the other hand, can work to its capacity every minute of the twelve hours, so that the 1 kilowatt can perform the work of eight horses, or fifty-six hired men, during the farm day. That is, 12 kilowatt-hours represents a day's work for eight horses or fifty-six men. As a

kilowatt will cost from 3 to 10 cents, the cost of electricity consumed on the farm during a twelve-hour day will be from 36 cents to \$1.20. Electricity as a farm hand makes Chinese coolie labor with its reputed wage scale extravagantly high. For such labor to compete on equal terms with electricity, the wage scale of the coolie would have to fall between less than two-thirds of a cent and slightly over two cents a day.

In terms of power capacity, a good horse will cost from 20 to 25 times as much to keep in good condition.

The wonderful economies—to say nothing of the conveniences and comforts—in farming made possible by the present electrical de-

velopment, entail, however, a supply of electricity on or to the farm, and here again it is well to turn to the experience in industrial manufacturing for guidance. The manufacturing plant either secures its electric power from a central station—paying only for the power it actually consumes—or operates its own power plant. It is a much disputed question, and will probably always remain a matter of controversy, whether central station current or that generated by the private (isolated) plant is the more economical in manufacturing activities. Very much the same question arises in connection with the use of electricity on the farm. Will it cost less to buy the electricity from a central station or to install a small generating plant on the farm? Usually, the purchase of electricity will prove the more satisfactory and less costly, and will provide that almost unlimited expansion which will be found to be highly



One small motor (3 hp.) on a Colorado farm pumps all the water for 3,500 sheep, 27 cows and 50 hogs, drives a milking machine used twice a day to milk 20 cows, operates the cream separator and the corn grinder, and drives a cucumber-seed cleaning machine in spare moments.

desirable when the economy, convenience, safety and comfort of electricity on the farm is appreciated from actual experience.

A very large number of farms not now supplied with electricity can be reached from cross-country high-voltage transmission lines. Tapping these lines of supply entails more or less expense, it is true, and the willingness of the central station owners to have branch lines extending into comparatively thinly populated sections is a matter which requires rational and cooperative action between the farmers and the power companies. If farms near the main transmission lines draw upon the electrical supply, those a little farther removed can be supplied without great outlay on the part of either the central station or the farmer consumer; then those still farther removed, and so on.

The cheapest electricity procurable is that from the large hydroelectric developments which are continually harnessing more and more of the vast water powers throughout the country; so if there is a stream on a farm which has to install its own electric plant, the cheapest installation is a water wheel and generator (dynamo), supplemented perhaps with a storage battery to store the excess of electricity when not needed, and to furnish the reserve capacity when the demand is high, which the normal output of the installation may lack. These small hydroelectric developments on farms present no great difficulties, if the water supply is adequate, but require some ingenuity and a certain amount of engineering talent.

Farm Light and Power Sets

Where neither central station service nor a suitable stream for operating a water wheel and dynamo is to be found, and of course there are many thousands of farms not so favored, an engine of some sort must be installed to drive the electric dynamo—usually an internal combustion engine operating on gasoline, kerosene or other volatile liquid. Progressive manufacturers have evolved numbers of compact and relatively efficient farm sets for lighting and power supply which are simple to operate and bring the conveniences, comforts and to a lesser extent the same economies to the most remote and isolated farm. The qualification of the economy to be realized from such farm sets does not mean that they are expensive to run, or that they are not decidedly economical in comparison with any other form of farm power but simply that greater net economy can be secured if the mains of a large central station can be tapped.

The farm sets, sometimes rated in the number of electric lights they will maintain—i. e., in lamps—consist of the necessary engine dynamo, a switch-board, and usually a storage battery reserve, and generate electricity at 32 or 40 volts. When the high power transmission lines of the power companies are drawn upon, the current has to be stepped down by a transformer to a safe voltage—standard at 110 volts for lighting and light power purposes, though for heavy power consumption a voltage of about 220 volts is to be recommended. The differ-

ence in voltage is the chief difference—other than that one is direct and the other alternating current—between the current furnished by the farm set and the central station. This one point is mentioned for the reason that the leakage of electricity in wire connections is about nine times as serious at the lower voltage than at 110 volts. It is the part of wisdom, consequently, to use the central station current whenever possible, or to install one of the larger farm sets generating current at 110 volts.

Power Requirements of Farm Equipment

Farm sets and the chores on the farms which can and should advisably be done electrically, have been so often featured that it would seem of greater interest and prove of more constructive value to record, first, what is the electric power required to operate a few of the various types of machines and equipment used largely on the farms, and second, what is the extent of the chore which an electric kilowatt—costing from three to ten cents—will accomplish. The accompanying tables present such information and the economies cannot well fail to surprise all who have not used electricity, or who have not given the use of electricity on the farm due consideration.

AVERAGE POWER REQUIREMENTS IN KILOWATTS

Cream separators	0.10—0.75
Milking machines	0.37—4.00
Butter churns	0.10—2.00
Bottle washers	0.12—0.75
Water pumps	0.20—75.00
Washing machines	0.12—1.50
Vacuum cleaners	0.05—0.10
Grindstones	0.12—0.75
Wood saws	1.50—7.50
Corn shellers	0.37—10.00
Shredders	7.50—15.00
Ensilage cutters	7.50—20.00
Feed grinders (small)	2.00—7.50
Feed grinders (large)	7.50—22.50
Thrashing machines	7.50—50.00
Hay balers	2.00—7.50
Hay hoists	2.00—10.00
Wood splitters	0.75—3.00
Oat crushers	1.50—7.50
Lathes	0.10—0.20
Sewing machines	0.02—0.03
Buffers and grinders	0.02—0.03
Ice cream freezers (large)	0.10—0.20
Centrifugal dryers	0.75—1.50
Mangles	0.20—0.75
Meat grinders	0.20—0.60
Sausage stuffers	0.37—0.75

What Electricity Can Do

It has been found that electric lights in the hen house will stimulate laying 50 per cent during the dark winter months. Picking fruit by electric light after 9 p.m., that the temperature of the fruit might be such at the time of picking as to maintain the quality of the fruit during transit to Europe, was successfully resorted to during the war. Cow barns with electric fans to keep Bossie cool in the summer, and for ventilation in the winter, are no longer novelties. These and many other special uses for electricity on the farm could be enlarged upon, but probably an account of the chores done by one small three-horsepower motor out in Colorado will prove of even greater interest.

This little farm hand, without being overtaxed, pumps all the water for 3,500 sheep, 27 cows and 50 hogs, drives a milking machine used twice a day to milk 20 cows, operates the cream separator which handles the entire milk supply, and operates a corn grinder twice a day as a regular share of the work.

What a Kilowatt Will Do on the Farm

Operate a 16-candle-power lamp for about a month.
Operate a 6-lb. flat-iron for two and a half months.
Do a wash equivalent to twenty sheets weekly for about two and a half months.
Operate a vacuum cleaner long enough to clean over 1/10 acre of carpet.
Operate a water pump long enough to raise 100 gallons 1,000 feet.
Run a sewing machine for some 20 consecutive hours.
Drive an electric fan four hours a day for nearly a week.
Brew with an electric percolator 2½ gallons of coffee.
Operate a heating pad as a bed warmer for from ½ a week to a week.
Run a domestic buffer and grinder five hours a day for three days.
Operate a chafing dish a quarter of an hour a day for more than a week.
Operate a foot warmer five consecutive hours.
Make 100 slices of toast.

In addition, during idle minutes, it drives a cucumber seed cleaning machine.

On a farm near Lancaster, Pa.—one of 160 acres and indicative only of what can be done in the way of using electricity on almost any farm—there are twenty-nine electric lights in the house proper, four in the cellar and three on the porches, and four 3-way switches controlling the lights in the spring house fifty or sixty feet distant from the house and also the lights in the main barn some hundred feet from the house, by wires laid underground. The spring house is supplied with plenty of light and contains a small one-horsepower electric motor for operating the milk separator, churn, grindstone, etc. The pig stable is electrically lighted with 3-way switches at the doors; an automobile shed contains the electric meters—the current is purchased from the central station—and two lights, while the main barn contains twenty-seven lights—eight on 3-way switches and six in the upper story and feed room. In the feed room is a 15-horsepower slip-ring motor capable of starting a 30-horsepower load which is used to grind feed, shell corn, break cobs, cut and bale hay, run a threshing machine, fill the silo, and run a cement mixer, and at other times run a hoist for unloading hay, and operate the sheaf elevator for unloading wheat. A steer barn—ninety feet long—is provided with three electric lights on a 3-way switch.

For the convenience of the farm wife, a one-sixth horsepower electric motor is installed in the cellar, and used for running the washing machine, and can be carried about and attached to any convenience outlet or light socket for the operation of other household appliances. Among the latter which are in frequent use may be mentioned an electric iron, a vacuum cleaner and a small electric stove. So convenient is this baby motor that at times it is taken to the barn to clean seed wheat.

Economy, Safety and Convenience

This farm is very favorably situated for obtaining reliable and relatively inexpensive service from the central station. In 1916, the rate charged for lighting service was 10 cents per kilowatt and for

current to be used for heating and power purposes, 4½c. per kilowatt. The average monthly bill based on such rates was for light \$2.34 and for power service \$4.75.

The electric motor is more reliable than any other type of power mechanism, for there are fewer parts to get out of order, only two bearings to oil occasionally, nothing to be affected by frost, and practically no attention is required. It starts at the touch of a button or switch in any weather—winter or summer—requires no fuel or water and can be instantly controlled from any distance. It can be made to work automatically in pumping water and in many other operations, and it has a more constant speed than gas or oil engine. It weighs only three-fourths as much as an equivalent gas engine, will carry a very much greater overload capacity for a short period, and can be obtained in all sizes.

With all these and many other advantages and economies favoring the use of electricity on the farm, it can only be a relatively short time before the more progressive of the thirty million people—about one-third of the entire population of the country—living on farms, will adopt the service as an absolute necessity, and so secure for themselves many of the comforts and conveniences which have heretofore been lacking in life on the farm.

ELECTRIC PUMPING INCREASES CROPS

Not only is electric irrigation essential to the development of great areas of arid land above the level of gravity irrigation, but more and more the land which has been dry farmed in such regions as Colorado, Montana and the Northwest, is being taken over for irrigation. An idea of the increased crops obtainable and the inducement for the use of the electric pump is indicated by the following crop returns from the state of Washington.

CROP	Unit	On non-irrigated land	Average	Per cent of average on non-irrigated
Oats	Bu.	19.2	36.7	191.1
Cereals:				
Corn	Bu.	41.9	46.7	111.4
Winter wheat	Bu.	21.1	18.0	85.3
Spring wheat	Bu.	12.6	25.9	205.6
Barley	Bu.	26.1	33.6	128.7
Rye	Bu.	5.4	10.4	192.6
Hay and forage:				
Timothy alone	Tons	1.5	1.9	126.7
Timothy and clover mixed	Tons	2.1	2.1	100.0
Clover alone	Tons	2.1	1.8	85.7
Alfalfa	Tons	2.0	3.3	143.5
Other tame grasses	Tons	1.6	2.1	131.2
Grains cut green	Tons	1.1	1.3	118.2
Wild, Salt, or prairie grasses	Tons	1.1	2.0	181.8
Corn cut for forage	Tons	1.5	3.0	200.0
Silage crops	Tons	6.6	9.0	136.4
Root crops for forage	Tons	9.5	4.2	44.2
Vegetables:				
Potatoes	Bu.	92.4	186.4	201.7
Sugar beets	Tons	8.4	8.7	103.6
Fruits:				
Grapes	Lbs.	*7.3	*11.9	163.0
Apples	Bu.	†2.0	†3.4	170.0
Peaches	Bu.	†1.5	†2.1	186.7
Pears	Bu.	†1.5	†2.3	153.3
Plums and prunes	Bu.	†.8	†1.7	212.5
Miscellaneous:				
Red clover seed	Bu.	1.8	4.4	244.4
Hops	Lbs.	1197.7	1717.5	143.4

*Yield per vine.

†Yield per tree.

The Pacific Salmon Challenges the Hydroelectric Engineer

The Habits of the Western Salmon and Ways and Means of Solving the Peculiar Problem He Creates Where Power Plants Are Located on Salmon Rivers

BY H. W. CROZIER
Electrical Engineer, Sanderson & Porter

Salmon, swimming in the Klamath River, have put California hydroelectric engineers on their mettle with a new problem wherein they are challenged to provide for the salmon's continued existence after the completion of the proposed high dams. Fishways for surmounting the dams, ways and means to get the baby salmon down after their parents have ascended, and the necessity of pronouncing "*oncorhynchus tshawytscha*," the ferocious scientific name

Studying the salmon's natural history has added an interesting chapter to the hydroelectric note books, and the plans for assisting the salmon in surmounting the high dams as outlined to the Federal Power Commission are believed to represent the last word in this novel subject.

The Career of a Pacific Salmon

Pacific salmon found in the rivers emptying into the Pacific Ocean from San Francisco Bay northward, in California, Oregon, Washington, British Columbia, Alaska, Siberia and Japan, are a distinct genus (*oncorhynchus*), and essentially different from the salmon of the Atlantic Ocean (*salmo salar*). They live most of their lives in the ocean, and only enter the rivers when their spawning migration instinct impels them to seek the spawning beds near the headwaters. Mature Pacific salmon eat nothing when on the spawning migration in fresh water, and therefore seldom take a fly. After spawning once, all die, both male and female. The Chinook salmon, he of the ferocious scientific name, also known as Sacramento River Salmon, is the principal salmon of California rivers, and is hatched from eggs laid by his parent near the headwaters. He descends to the sea during the first six months in his life and lives usually four years in the ocean. The great majority of the salmon return to their parent stream to spawn in their fourth year, a few during the fifth and sixth years, and rarely a specimen has been taken seven years old. Some precociously developed fish, smaller than normal specimens and practically always males, return during the first, second and third years.

Little is known of the life of the salmon in the ocean, except that he has abundant food, as he grows rapidly, and is a beautiful and fat fish when caught swimming at sea or when returning in the river estuaries. To the painstaking efforts of the biologists who have studied salmon is due the large fund of information on his habits in fresh water, and the remarkable discovery that the salmon's scales retain a record of his life history. Enlarged photographs of salmon scales show rings similar to the finger print records used by the police, and the life history of the salmon may be read with accuracy. The six months as a fry in fresh water, or perhaps eighteen months if he loitered in the river over a summer, are indicated quite clearly in a central nucleus, each of his four years in the ocean are clearly shown by heavy bands or series of rings, and further facts may be determined with surprising precision; for instance, if the salmon happened to be one of the few hatchery-raised fish who survive, this fact is indicated by an abrupt break in the record on the



East approach on fishway over the Portland Railway Light & Power Company's dam on the Willamette River, at Oregon City. The large pools on the main waterway, where the salmon can rest, are from 15 to 20 feet wide. The great salmon fishing industry of the Northwest makes the fishway an important consideration for the engineer who is planning hydroelectric developments in this region.

the salmon uses, are specimens of what confronted them, when descending from hydroelectric triumphs in the Sierras above the range of the salmon, they were planning a hydroelectric project on the Klamath.

Substantial progress has been made in salmon fishway design for overcoming high obstructions in the streams of Oregon and Washington, but the problem presented by the construction of a great dam in a river supporting a commercial run of salmon has not been previously attacked. That it would prove insurmountable the engineers would not admit, remembering the long list of difficulties which had been overcome in developing the hydroelectric art to its present high level, and in which California engineers and scientists had taken a prominent part.

scales, representing probably the transition from protected to wild conditions.

Commencing in June and continuing until December, the spawning migration of the salmon reaches a maximum in September in most California rivers, the fish actuated by what appears to be an irresistible migration instinct to ascend to the headwaters of rivers. Nothing save vertical falls stops them, and they jump low falls, run the fastest rapids and persist in spite of profound injuries. Entering the river from the sea, fat, sleek and beautiful, they are seen on the spawning grounds emaciated, with jagged cuts from rocks, torn fins and tails, and generally unfit for food. Their stomachs are empty and shriveled.

The Salmon's Right-of-Way

As a salmon is a large active fish, several feet long and sometimes attaining the weight of ninety pounds, necessarily fishways for his accommodation must be of substantial size. One type of fishway that has been used consists of a deep flume six feet wide divided into six-foot boxes by partitions which have a two-foot notch arranged for spilling water from each box to the next. From eight to ten second-feet of water is required. A better way, however, is to construct the fishway as a series of pools, water spilling from one pool to the next; as thereby, when the physical conditions permit, pools of large dimensions may be obtained with moderate expense. The secret of success with fishways for salmon is to make them of ample size with plenty of water, and to provide frequent extra large pools for resting purposes.

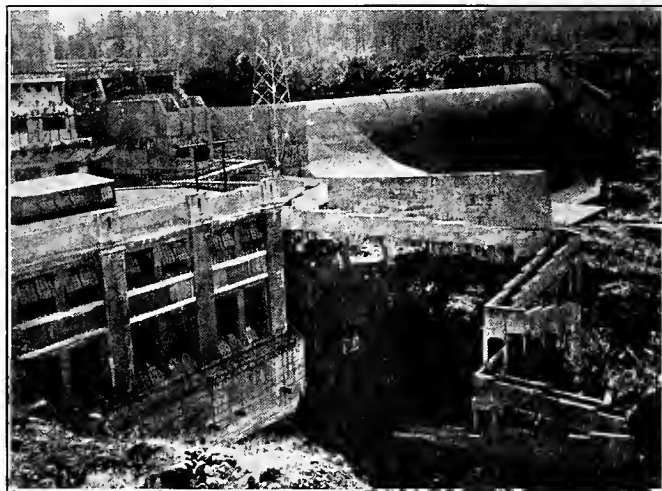
Fly-fishing, for which an innumerable variety of lures is available, is considered sport; but it is nothing to the sport the fishway-engineer has in devising his fishway entrance to entice the salmon to enter, for which purpose he has three lures. One of these is the salmon's migrating instinct, which has been touched upon in describing how energetically he overcomes all obstacles in reaching the spawning grounds; another is his instinct to return to his parent stream, this being a well accepted theory of the biologists, which explains that the salmon returning from the ocean to spawn always tends to seek the stream in which he was born; and third is the salmon's instinct or liking for aerated water, which as a French scientist has pointed out is one of the strong impulses which actuates the salmon in his migration.

The great dam to be located just above the confluence of the Salmon River on the Klamath River has several natural advantages favorable for the location of a fishway, principally because there is a saddle a short distance away from the dam which will be used for spillway purposes, and where the fishway can be built on a long, easy grade from the water. By taking advantage of the natural slope the engineers may, by building small dams or walls, form large resting pools at frequent intervals. To entice the salmon into the fishway, a big basin adjoining the river is to be the entrance to the fishway. Into it will tumble all the waters from the spillway, and

several cascades will be arranged to aerate the water highly.

Our friend, the salmon, coming up the Klamath will find a good stream of water, highly aerated, falling into the river from this fishway basin, and most of the year this stream will be at least half of the total flow. He will be attracted to investigate, and with a flash of gleaming silver, over he goes into the big pool. Such water should suit him well, as it comes from his birthplace up the river, or from his parent stream.

His only way out is up the fishway, containing highly aerated water from cascades, and after amusing himself for a while jumping into the spillway



View of the fishway on the Portland Railway Light & Power Company's eighty-foot dam, located at the River Mills power house on the Clackamas River.

water which also cascades into the pool, he has no choice but up the fishway he goes. As he might get discouraged presently, jumping from box to box of the fishway, the big pools permit him to rest, and presently he will continue to advance through the alternating fishway sections and resting pools till he reaches the top of the dam and the great lake above.

The resting pools are very important. Salmon jumping are said to get discouraged after awhile; and the resting pools, giving variety, are the secret of success in surmounting high lifts.

Headed For the Power House

The little fry coming down stream fortunately do so in great numbers at the end of the winter and in the spring when the water is high. Gently dropping down the stream with the current they presently come to the placid waters of the great lake and must swim to progress in the gentle current. As they feed on insects and grubs, they keep close to the surface, but travel mostly at night to avoid bird enemies, unless it is very cloudy. Consequently they are always within the influence of the surface currents setting toward the spillway. Coming near the dam, they presently sense an increasing current and gradually get into the spillway and descend with the water to the river below without injury, as the spillway is a series of short cascades, without any sheer drop. As they swim near the surface, they avoid altogether the entrance to the great tunnel fifty feet

below the surface through which the water rushes to the mighty turbines.

If perchance the fry should get entangled in the current to the rapidly whirling turbines, no harm would result, as the water flows through the very large, smooth water passages of the turbines in an unbroken stream, a result modern turbine designers have attained in striving for high efficiency. Unless unlucky enough to impinge on the point of one of the vanes, the fry whisk through without injury. Salmon fry in great numbers were pumped through the pumps of the Glenn-Colusa Irrigation Canal last year without apparent injury, and fish do not seem to be affected by considerable pressure, as witnessed by the many authenticated cases of regular passage through inverted siphons under heavy pressure, as well as by their behavior in Lake Tahoe and in the sea when hauled out from great depths by fishermen.

Screening the small fry from irrigation canals has proved difficult because of their habit of gently drifting down stream with their heads to the current. Naturally they enter any screen tail first. In hydro-electric practice, conditions are markedly different because of the still water of the large lakes behind the dams and the considerable submergence which can be given to the intake tunnels.

The ultimate result of the salmon's challenge to the engineers will be the development of the fishway in California to meet the demands of the hydro-electric art. The construction of the dams will result in adding to the Klamath Sportsman's Paradise great lakes full of trout, with improved accessibility via the railways which must be built for construction purposes; and, last, but most important, the development of several hundreds of thousands of hydro-electric horsepower for the industrial development of California.

Why Not Revive the Former Pig Iron Industry of Oregon?

Reasons Why This is a Good Time to Start Again a Basic Industry of the West Whose Early Failure Was Due to an Unfortunate Combination of Circumstances

BY WILLIAM H. CRAWFORD

Manager Industrial Bureau, Portland Chamber of Commerce

It is not generally known that as long ago as 1867, pig iron was manufactured at Oswego, Oregon, twelve miles south of Portland on the Willamette River. This probably marks the beginning of the iron industry on the entire Pacific Coast.

The Old Stone Furnace

The little, old stone furnace stands today as a landmark, and very few who pass that way realize for what purpose the quaint structure was built.



A distant view of the plant of the Oregon Iron & Steel Company, constructed in 1888. In the foreground is one of the ore cars used on the narrow gauge line to the mines.

When informed that it is a twenty-ton charcoal iron furnace, and that for eighteen years it operated on a profitable commercial basis, one naturally asks, why did this industry die out?

Old trails lead to the abandoned mine workings, which have long since caved in or filled with water. And what is even more surprising, less than a mile north of the old stone furnace stands a monumental

wreck in the shape of a more modern blast furnace with towering steel stack, buildings and equipment that suggest a corner of the Pittsburgh district. The machinery name plates show that this one hundred-ton blast furnace was built in 1888. Why is it a wreck today, and why was it ever built?

Moving Into Larger Quarters

In the records of the Oregon Iron & Steel Company, some interesting history is disclosed. The original Oregon Iron Company was incorporated February 23, 1865, with capital stock of \$200,000. The first pig iron was made on August 24, 1867. One transfer of the property was made in 1878 to the Oswego Iron Company, and a second transfer in 1882 to the Oregon Iron & Steel Co. Up to November, 1885, over 40,000 tons of pig iron had been made in the original furnace.

The Oregon Iron & Steel Company was capitalized at \$1,500,000. Because of the great success attending the operation of the original twenty-ton stone furnace, the owners decided that the time was ripe to go into the business on a large scale. They sent east for the best men they could hire. On the recommendation of the eastern experts, these Oregon pioneers were induced to build the most modern, up-to-date plant that money could buy at the period of its construction. They felt that they were building for the future, and had the courage of their convictions. Construction of the new plant began January first, 1888.

The Story of a Failure

From a twenty-ton output using charcoal fuel, they jumped to a one hundred-ton output. Then their troubles began. The business that was so suc-

cessful when handled through the little old stone furnace quickly terminated when transferred to the big plant close by. Most of the reasons are very apparent. Overhead expenses were increased to a ridiculous total. The market demands did not begin to call for the full capacity of the new blast furnace.

About the same time, a financial depression swept over the country, and the price of pig iron

ness and operating conditions; reasons very readily understood, and when properly analyzed, standing in no way against the manufacture of pig iron as a basic Oregon industry. The same thing has happened many times in other lines of business, but in spite of a remarkable increase in the price of pig iron (without a corresponding increase in the cost of production) we have up to this year of 1921 failed to see a revival of this important industry in the Columbia River Gateway country.

A Field for New Enterprise

The old ore bodies that justified the Oswego operation are known to extend through the hills behind Portland and down the Columbia River, through Columbia county, a distance of nearly fifty miles. Most of this country is heavily timbered and it is only in odd spots that any amount of prospecting has been done.

During the last year, a group of local men, with some eastern capital, have been carrying on considerable development work at points where the outcropping seems to indicate large measures of iron ore. Spots were selected where operating costs would be at a minimum, and where analysis showed the percentage of iron high enough to justify the investment in a small furnace.

Most of this work had been in the vicinity of St. Helens, which is less than thirty miles west of Portland, on the Columbia River. Several large ore bodies have already been blocked out, and the iron appears as 54% (average sample) limonite. A prospective furnace location is close to St. Helens, and bids are now being received on a fifty-ton charcoal iron furnace for an initial operation. It is reported that the timber refuse from logging operations will be converted into charcoal, and that charcoal iron will be manufactured until such time as an adequate coke fuel supply is developed.

A Promising Western Industry

The time seems to be ripe for this industry to be again established on a sound basis that will carry through times when markets are normal or even depressed. The Pacific Coast uses upwards of 100,000 tons of pig iron per annum, which at present prices—approximating \$30.00 per ton—represents millions of dollars of western money that go to the eastern mills and transportation companies.

With proper conservatism in the original investment, this revival of the manufacture of Oregon charcoal iron should gain a strong foothold, and should gradually expand into surrounding territory north, south and east. Portland is already well established as an industrial center, with the mechanical products occupying a prominent position. The raw material supply for this industry lies close at hand, labor conditions are ideal, transportation facilities and distributive advantages have already been proved at this point on the Columbia River to justify the optimism of those who are now endeavoring to take up the manufacture of pig iron, thirty years after the shut-down of the old Oswego blast furnace.



The old stone furnace built in 1866, Oregon's first venture in the production of pig iron.

dropped so that the eastern product was dumped on the Pacific Coast far below the cost of manufacture at the new plant. On top of this, difficulties were experienced with the ore supply, in that conflicting property interests brought about a law suit so that additional ore bodies had to be opened. Also, the quality of the ore had deteriorated to such an extent that it required twice the normal amount of charcoal per ton of iron as compared with standard charcoal iron furnaces. The physical condition of the new ore bodies made the percentage of "fines" so large that dust explosions causing damage and loss of production made economical operation impossible without expensive re-design of furnace.

The record shows that the new plant operated at a loss from the day it started, and that within five or six years, the orders came to close down. The shut-down has now lasted for about thirty years, in which time, of course, the plant has gone to almost complete ruin. However, the big question of the manufacture of pig iron in Oregon is again a live issue.

A Mistaken Generalization

The remains of this stupendous undertaking, coupled with the knowledge that heavy financial interests were behind the original enterprise, have led to the popular belief that the manufacture of pig iron here must be economically unsound. If these wealthy families could not make it go, who could succeed?

But the failure was due in large part to poor business judgment plus unfortunate temporary busi-

Study Course

For the Contractor-Dealer, and the Business Man in the
Small Industrial Plant

University Accounting Course — X

Double-Entry Theory — The Ledger and the Journal

BY PAUL B. KELLY

The multiplicity of accounts that are kept, even in a small business, makes it advisable to assign each account a page, or several pages, in a specially prepared book. This book is called the General Ledger and, more often, the Ledger. It is worth while to repeat the definition of the Ledger.

The Ledger is a collection of all the accounts necessary to make a complete exhibit of Assets, Liabilities, and Net Worth.

Observe that the definition does not say that the Ledger is a book. **The Ledger is really the accounting equation.** It might be operated on a single sheet in the skeleton form used in earlier lessons. It is more efficient, however, to keep it in book form. The book is merely a means to an end. Keep the fact always in mind that you are constantly dealing with the accounting equation. Books and forms are nothing more than the tools with which the accountant works.

The ledger is the vital part of the accounting system. All business transactions are reflected in it eventually. If you understand the nature and function of the ledger you will have no great difficulty in operating the Standard Accounting System. The special forms which it uses are either, memoranda of transactions, or, sheets used for making preliminary totals of these memoranda as a basis for summarized entries to the ledger.

The advantages of the book form of ledger are:

1. Each account can be assigned a number of pages in the book proportionate to its needs.
2. The ledger page is larger and is specially ruled so as to show additional information.
3. It reduces the number of errors made by posting entries to the wrong accounts. If the skeleton form of ledger was used it would necessitate an extremely large sheet with a great many columns. Many mistakes would result from entries in the wrong column.

Gathering the Data for the Ledger

It is manifest that every time a sale is made or a sum of cash is received from a debtor, it would be impracticable to get out the ledger and make a double-entry. Also, it is evident that unless a memorandum of each transaction is made at the time when it occurs, some transactions will be entirely forgotten and will not be reflected in the ledger. Special forms, therefore, are devised on which the necessary

memoranda is made quickly and accurately. These special forms are so designed that they accomplish other objects in addition to furnishing the data for the ledger in the most convenient form. These special memorandum forms include the Job Envelope, Cash Sales Tags, Customer's Bills, Cash Receipt Tags, Check Stubs, Invoices, etc. The exact use of these forms in recording the necessary information was explained in the first four lessons of this course in a section called "Gathering the Preliminary Data." You now understand the significance of that title.

The Journal

The isolation of each account on its special page in a book form of ledger creates a very practical difficulty. In the book form of ledger the debit element of a double entry gets placed in one account and the credit element is entered in another. After the entry is made and forgotten for a time, it becomes difficult to link them together again if the necessity arises. Such a necessity does arise when the Trial Balance points out that an error has been made. It sometimes becomes necessary to check each debit against each credit in order to locate the error.

In order to obviate this difficulty, a permanent record of each double-entry is made before it is entered in the ledger. This permanent record of entries is known as the Journal. The definition that is usually given of the Journal is as follows:

The Journal is a chronological record of transactions expressed in terms indicating the entries to be made to the Ledger.

The journal is used for two reasons:

1. To guarantee the equality of debits and credits before the entries are made in the ledger.
2. To expedite the discovery of errors made in posting the ledger.

The act of making the entries in the ledger that have first been recorded in the journal is called "posting."

The following is a sample of the journal form used in the Standard Accounting System. Notice that the page is divided into a debit and a credit side. This form is 9" x 14" in size and is printed on loose-leaf sheets that are kept in a binder provided as part of the Standard Accounting set. The date of the journal entry is placed above it on a separate line.

DR.										JOURNAL										CR.										Page 1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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The numbers of the ledger pages to which each journal entry has been posted are entered immediately in the columns provided for this purpose on the debit and credit sides of the journal form. The entry of the ledger page numbers in the folio columns indicates that the entry has been posted to the ledger. These ledger page numbers also serve as a valuable cross-reference and make it convenient to check the posting of the journal entries quickly if this becomes necessary.

The ledger pages are cross-referenced in a similar manner. On the same line of the ledger page on which the debit or credit is written, the date of the journal entry and the journal page number are entered. By means of this reference, the debits and credits appearing in any account may be readily compared with the original journal entries. The debit and credit elements of each transaction are thus closely linked together in the records.

In order to make this posting procedure perfectly clear, the ledger accounts to which journal entries illustrated above were posted are here presented. Trace each journal entry to the ledger accounts and note particularly how the records are cross-referenced.

CASH										Page 198									
Jan 1	Balance			2180	Jan 31			To Balance				J1	2000						
" 31	Rec'd on Acct	J1		2000															
				4180															
Feb 1	Balance			1180															
ACCT'S REC.										Page 184									
Jan 1	Balance			4500	Jan 31			Cash on Acct				J1	2000						
" 31								To Balance											
				4500															
Feb 1	Balance			2500															
MISC ACCT										Page 155									
Jan 1	Balance			6000	Jan 31			To Balance				J1	7500						
" 31	Purchases	J1		1500															
				7500															
Feb 1	Balance			7500															
ACCT'S PAY.																			
Jan 31	Paid by check	J1		7000	Jan 1			Balance				J1	4440						
" 31	To Balance			2940	Jan 31			Misc on acct					1500						
				5940															
					Feb 1			Balance					5940						
NET WORTH																			
Jan 1	Balance				Jan 1			Balance											

TRIAL BALANCE Jan. 31, 1920			
Cash	1180		
Accts Rec	2500		
Misc	7500		
Accts Pay		2940	
Net Worth		8240	
Totals	11180	11180	

Notice the method used in totaling and balancing each ledger account. The lines used in the

footings are always drawn with red ink. The first single line is a signal that an addition is to be made. The totals are then placed below this line. Beneath the totals, double red lines are drawn. The double red lines indicate that the footing on the debit side is equal to the footing on the credit side. Their significance is the same as that of the = sign used in the accounting equation.

The "To Balance" figure shown in each account is obtained by first footing each side in pencil figures, and by then finding the difference between them. The "To Balance" figure is the amount that must be added to one side of the account to make it equal to the other side. After this figure is inserted the account balances. The "Balance" of the account is brought down on the proper side below the double red lines. It is, of course, always equal to the "To Balance" figure, but always appears on the opposite side of the account.

This system of bringing down account balances should be rigidly followed because it necessitates a re-check of the figures. Little errors that waste time are thus prevented.

Indexing the Ledger

The number of pages in the ledger that should be assigned to a particular account depends upon the number of entries that probably will be made to it. There are 284 pages in the ledger provided as part of the Standard Accounting System. The space in this ledger should be allotted in proportion to the needs of each account.

The accounts should be arranged in the ledger in the same order in which they are listed in the Summary of Operations and the Balance Sheet. This arrangement facilitates the compilation of these monthly statements by eliminating unnecessary turning of pages.

To arrange the ledger in the most efficient way is somewhat of a difficult task if knowledge about the relative activity of the various accounts is lacking. Therefore, an index to the ledger is given at the end of this lesson. This index should be written in the front of the ledger on the pages provided for it. This alphabetical index serves as a guide to the location of the accounts in the ledger. By merely opening each account on the page shown opposite to it in this index, the accounts will be arranged in the proper order and each account will have space proportionate to its needs. Be sure to preserve this

index. Its use will save you a great deal of time when you start your ledger.

Summary

1. The ledger and the journal are the essentials and the only essentials of an accounting system.
2. It is a hard and fast rule that no entry shall be made to the ledger without a previously made journal entry.
3. It is necessary to cross-reference the journal and the ledger by filling in the folio columns.

INDEX TO GENERAL LEDGER FOR STANDARD ACCOUNTING SYSTEM

Account Name	Page	Account Name	Page
Acceptances Payable	238	Merchandise	155
Accounts Payable	240	Money in Escrow	210
Accounts Receivable	184		
Advertising	61	Notes Payable	232
Allowance—Depr'n on Autos	108	Notes Receivable	180
Allowance—Depr'n on Furn.	104		
Allowance—Depr'n on Mdse.	116	Other General Expense	95
Allowance—Depr'n on Tools	112		
Allowance—Loss on Accts. Rec.	100	Petty Cash & in Drawer	208
Association Expenses	75	Postage Expense	58
Automobiles	138	Profit & Loss Account	274
Automobile Expense	89		
		Real Estate	130
Capital Stock	230	Rent Expense	45
Cash	198	Reserve—Depr'n on Autos	262
Cash Advances	212	Reserve—Depr'n on Furn.	253
Cash Discount Allowed	10	Reserve—Depr'n on Mdse.	270
Cash Discount Earned	36	Reserve—Depr'n on Tools	266
Cash Guaranties	144	Reserve—Loss on Accts. Rec.	254
Cash, Petty & Cash in Drawer	208		
Commissions Allowed	15	Salaries	40
Commissions Received	33	Sales Billed	1
Cost of Sales Billed	20	Sales Billed—Cost of	20
		Stationery & Off. Supplies	50
Deferred Charges to Income	228	Surplus Account	283
Dir. Job Exp.—Unbilled	165		
Dividends	280	Taxes Accrued	250
		Taxes Expense	66
Freight, Express, & Carting	30	Taxes Paid in Advance	222
Furniture & Off. Appliances	135	Telegraph & Telephone	55
		Tools	141
Insurance Expense	70	Travel & Entertaining	53
Insurance Premium Advances	216	Trade Acceptances Receivable	194
Interest	95	Trade Acceptances Payable	238
Investments	146		
Labor in Progress	170	Warehouse Upkeep	30
Light, Heat, & Power	48		

This lesson completes the second section of this course. Two-thirds of the course has now been completed.

The first section, comprised by lesson 1 to 4, described the means used by the Standard Accounting System in gathering the preliminary data necessary to keep a double-entry system of accounts.

The second section, which included lessons 5 to 10, explained double-entry theory, and the fundamentals of bookkeeping. This is the most important and the most difficult section of the course.

The third section of the course includes lessons 11 to 15. This section deals with the practical operation of the Standard Accounting System. It is chiefly concerned with the explanation of the time-saving features of modern bookkeeping.

The third section of the course will be easy to understand if the lessons on theory were thoroughly mastered. In order to find if you have mastered the previous lessons it is well for you to ask yourself these questions:

1. Do you understand the fundamental equation of accounting and the manner in which the three fundamental classes of accounts are evolved from it?
2. Do you understand the nature and function of each account appearing in the Summary of Operations and in the Balance Sheet?
3. Do you understand the nature and functions of the Ledger and the Journal?

If you cannot honestly answer these questions in the affirmative it indicates that you need to review the lessons on theory. The remaining lessons teach you the practical application of what you have learned. You could never operate a double-entry system efficiently without this training. Now that you have received it you will find that to learn to operate the Standard Accounting System is not a difficult matter. You have also greatly increased your capacity and qualifications as a business man by learning to read and to understand business and financial statements.

TRADE OF THE UNITED STATES WITH HAWAII IN 1920

Shipments from Hawaii to the United States practically doubled in value in the calendar year 1920 compared with 1919. The total shipments to the United States aggregated \$192,383,185 in 1920, against \$98,363,015 in 1919, an increase of \$94,020,170. The principal increases were: Canned pineapples from \$17,640,710 in 1919 to \$29,176,104 in 1920, raw sugar from \$74,153,389 in 1919 to \$154,550,205 in 1920, refined sugar from \$2,152,570 in 1919 to \$4,162,032 in 1920. In both classes of sugar there were slight decreases in quantities in 1920; raw sugar decreased from 1,134,989,418 pounds in 1919 to 1,077,079,496 pounds in 1920, and refined sugar from 23,915,015 pounds to 22,547,635 pounds. Shipments of molasses rose from 9,882,567 gallons valued at \$509,489 in 1919, to 12,126,132 gallons valued at \$665,812 in 1920, and bananas from 115,127 bunches valued at \$102,796 in 1919 to 182,772 bunches valued at \$176,020 in 1920.

Shipments of coffee to the United States decreased from 3,144,351 pounds valued at \$652,837 in 1919 to 1,885,703 pounds valued at \$476,033 in 1920.

Shipments of merchandise to Hawaii during 1920 increased 48 per cent over 1919. For the year just ended the exports to that territory aggregated \$74,052,453 against \$49,983,869 in 1919. Increases occur in nearly every class; the principal ones are given in the following table:

Articles	1919	1920
Breadstuffs	\$4,800,801	\$6,239,102
Automobiles	1,873,318	3,698,937
Cotton manufactures	2,835,042	5,172,829
Electrical goods	1,006,343	1,562,711
Iron and steel manufactures	8,153,113	12,541,742
Leather, and manufactures of	1,164,897	1,702,831
Meat and dairy products	2,373,449	3,093,447
Mineral oils	5,848,552	7,812,531
Paper manufactures	1,326,738	2,013,523
Wood, and manufactures	3,100,438	5,857,377

MANILA PORT IMPROVEMENTS

In a recent issue of the Bulletin of the Philippine Government Commercial Agency, it is stated that the port of Manila will soon be equipped with a modern marine railway or dry dock with a capacity of 8,000 tons, according to plans launched by the Honolulu Ironworks and the Earnshaw Shipways. The cost of the project has not yet been decided and the awarding of the contract is left with the representatives in Honolulu.

Western Dealer, Jobber and Agent

Business building suggestions for the store—
Distribution and warehousing methods—
Advertising and sales promotion ideas

KEEPING IN TOUCH WITH THE SALESMAN

In order that the home office may keep fully in touch with the work of the salesmen on the road, the Western Electric Company makes use of a system of

The form is divided into two main sections: the front side for the salesman's report and the reverse side for customer classification and expense reporting. The front side includes a header for 'SALESMAN'S DAILY REPORT' with fields for date, town, and salesman. Below this is a section for 'CHANGES TO BE MADE IN LIST OF CUSTOMERS' with a table for recording new, old, and deleted customers. The reverse side features a 'CLASSIFICATION OF CUSTOMERS' section with a list of customer types and a table for recording sales and expenses.

Front and reverse sides of the report which is sent in daily by the salesman on the road from each town which he visits.

daily reports in triplicate which provide all the necessary information in convenient form. A separate report is made out for each town visited so that this may be filed or transferred to other records.

The record includes a report on the customers visited, any changes to be made in the names or character of account carried, the names and necessary information on new customers secured, word as to what action the salesman desires the office to take in following the matter up, and a detailed expense report. One of the most useful portions of the form is that which calls for a daily report of expense. This is summed up at the bottom of the page with two totals which appear opposite each other and which give the salesman a check on what he is actually accomplishing. These figures are those indicating the total amount of orders taken during the day and, secondly, the total expense.

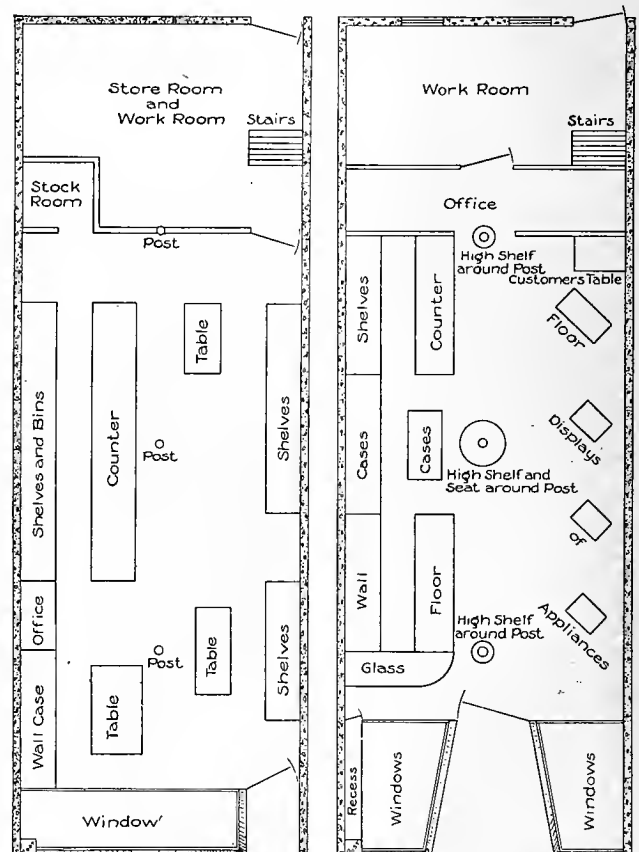
PLANNING THE LAYOUT FOR THE SMALL STORE

An effective plan for remodeling the small store is suggested by the sales promotion department of a leading manufacturer. The dealer who is hampered by a narrow floor space will find the accompanying diagrams suggestive of what can be done by a little rearrangement. The old store had a shallow window, crowded furniture and a cluttering of shelves, office equipment and pillars which prevented the dealer from any possible efficiency of workmanship.

The suggested improvements include deep double windows which permit of the carrying out of a real plan in window display, a wide aisle through the

length of the store which will give a sense of roominess and will permit of the proper arrangement of larger articles—and a convenient and more sightly provision for the office. The posts are utilized by building circular seats about them and erecting circular shelves at a height of about six feet, on which can be displayed labeled devices which are being specially featured.

The opposite side of the store is occupied by a section of open shelves for labeled devices and by glass wall cases for hanging and portable lamps, and for miscellaneous goods. Glass floor cases provide display room for hollow ware and for other products which present an attractive appearance. The desk for customers is installed near the rear of the store and behind this the office stretches across the entire floor space. The workroom is provided with a rear outside door, and in any case is not visible from the interior of the store itself. Reserve stock is kept here and in the cellar. With a small store, only a limited number of appliances can be displayed at any one time, but this arrangement allows for great flexibility and gives opportunity for frequent change of display.

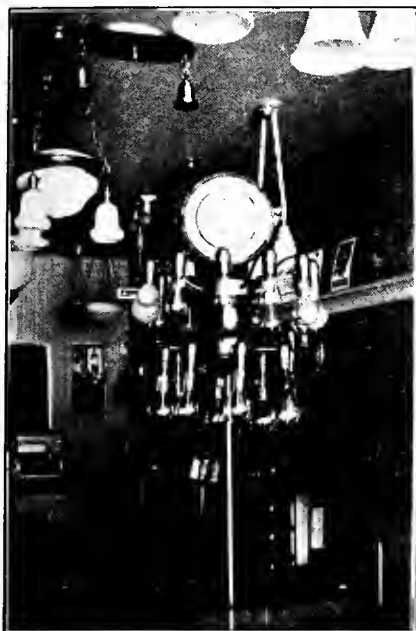


arrangement to be Remodelled

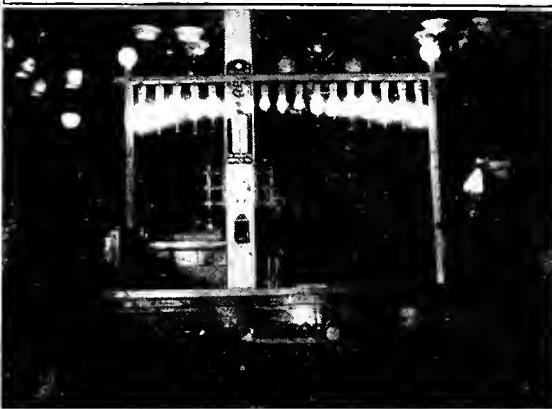
Remodelled Store Arrangement

Displaying Lamps

Southern California Electrical Dealers Use Many Different Methods



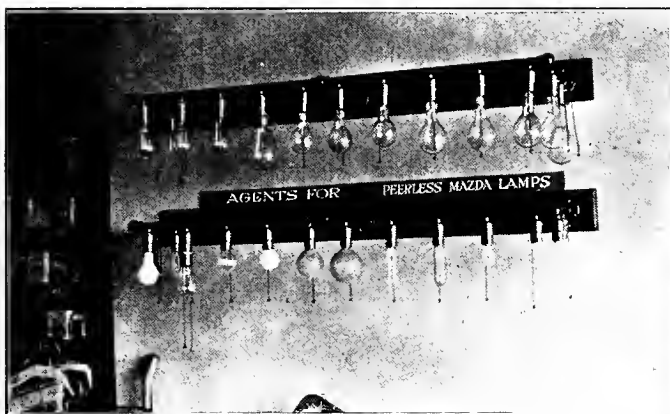
The lamp rack of the Granger-Hill Electric Company, Ontario, can be revolved, and the dealer's name is illuminated at all times.



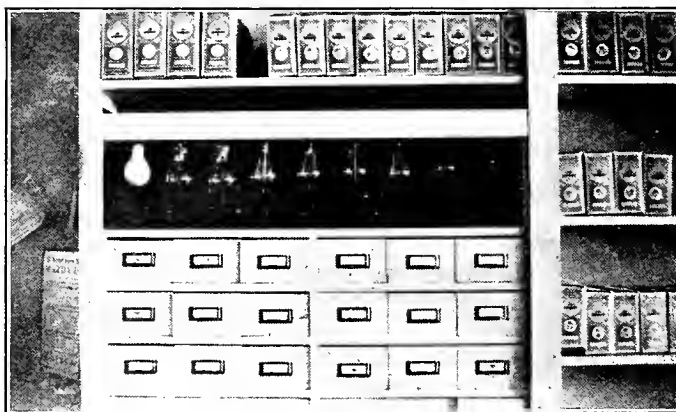
Pomona Fixture & Wiring Company, Pomona, mounts its lamp rack lengthwise on a special lamp counter. The rack is of brass tubing finished in old ivory.



Snyder & Bell, of San Bernardino, combine a lamp and appliance wall display case, finished to match the woodwork of the store.



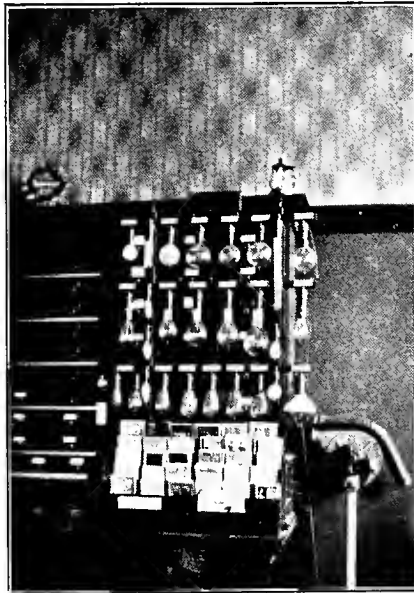
The lamp display rack of the Golden State Electric Company, Los Angeles, is made of black enameled iron conduit and is mounted on oak panels fastened to the wall in a conspicuous place.



The Cope Electric Company, Santa Ana, uses shelf space for displaying lamps. The background is metal finished in dull black, and the lamps are individually controlled by push buttons on the rear of the counter.



The Southern Electrical Company of San Diego has an effective lamp display rack of square brass tubing finished in verde green.



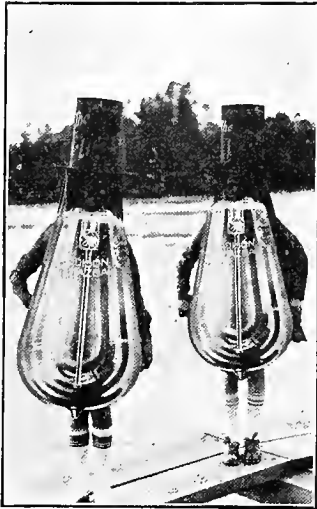
A card placed over each lamp in the display of the Hartwell Electric Company, San Diego, shows the wattage, candle power and price.



The Southwest Electric Company, Redlands, uses a low rack, placed at the end of the counter where customers receive their packages.

EFFECTIVE OPENING MEANS LATER BUSINESS

The Live Wire Shop of Mt. Vernon, owned, operated and managed by C. W. Ricker, is all that the name implies. The store had its grand opening on June 18 at which time Mr. Ricker gave away certain electrical appliances valued at approximately \$100, in the meantime securing a live prospect list of 1,000 names.



A telling stunt used by the Live Wire Shop of Mt. Vernon, Wash., to advertise its recent opening.

Visitors coming into the store on opening day were handed a numbered card. On this they were requested to jot down the names of electrical devices to be found in their own particular homes. In this way the store secured information which could be gleaned in no other way except by personal house

to house solicitation. Later a drawing was held and the holders of winning tickets were presented with some domestic appliance.

The little girls dressed in the Mazda lamps, made from pasteboard cartons, walked about town or about the store during the entire day.

The store itself is neatly furnished in white enamel with wicker furniture, and presents a cleanly and open appearance which is most appealing.

THINGS TO DO AFTER MAKING THE SALE

BY J. E. BULLARD

A salesman selling electrical appliances called at a house and was informed that washing machines were not at all practical for domestic purposes. There might be some doubt in regard to vacuum cleaners, irons and the like but in this house the old way had been found much more satisfactory.

A little expert questioning developed the fact that this woman had purchased a washing machine because she thought it such a fine thing to have in the house and that it would make the work of the laundress so much easier. She was in the market at the time she purchased this machine for complete laundry equipment. In fact she would have purchased a great many more electrical devices. She herself was thoroughly sold on the idea of the complete electrical home.

Now it happened in this case that the same woman had been doing the washing for this family for years. And as is usually the case, this wash-woman was not the most intelligent woman in the community. She did not understand that washing machine and it was not easy to show her how it worked. She decided it was lots easier to use a little brawn than to weary her brain attempting to master the intricacies of that queer machine. Besides she

was not sure it would wash clothes satisfactorily.

All this time the man who had sold the machine and gotten cash for it was conspicuous by his absence. The machine had been delivered and demonstrated to the lady of the house. She was quite enthusiastic about it and there appeared no need of coming back. In fact she had herself said so. She would show her woman who did the washing just how to use it. This, however, did not prove such an easy thing to do after all. This new purchaser had at best only a hazy idea of the machine. She was not at all sure of herself and that excited suspicion in the mind of the washerwoman and made her afraid.

Had the man who first sold this washing machine instructed the wash-woman in regard to using it, had he sold the idea to the wash-woman, had he succeeded in getting her enthusiastic about it, he would have been able to sell another thousand dollars' worth of appliances in that house. As it was the washing machine was never used. It was merely placed out of the way in one corner of the laundry and allowed to rust.

There is a dealer who is doing a very successful business who makes it a point to take back any goods which he is not able to sell to the person who uses them. Recently a man came into the store and purchased an electric range. His housekeeper (he was not a married man) was on a vacation and he thought it would be a good idea to have the range installed before she got back. The dealer pointed out some of the chances he was taking in following this course, but the man was sure the housekeeper would like the electric range.

When she got back and tried out the range, however, she was not satisfied. She seemed to think that somebody had been trying to take advantage of her. The dealer heard of this and insisted upon taking the range back. This insistence completely changed the face of affairs. If the dealer was so willing to take the range back she decided there must be some good points about it after all and wanted to be shown those points before she gave it up. A thorough demonstration convinced her that this range was a pretty good thing after all, once a person got accustomed to it, and that range not only remained installed but that housekeeper is now a thorough convert to electrical appliances.

There is a certain hardware dealer who carries this idea so far that he will refuse to deliver an appliance or other article if he has good reason to believe that the purchaser will not in every way be entirely satisfied with it. He goes so far as to advise the purchase of something from his competitor and will even go over to that man's store with his customer and help him make a selection. He finds that as a result he is getting much more business than he is losing, or rather giving away. He is building good will.

All good will building comes after the sale is made and not before. The very best of salesmanship cannot build good will before the prospective customer makes a purchase. It is the satisfaction given by the article purchased that creates good will.

Builders of the West

IN 1879 Thomas A. Edison invented his loud speaking (chalk) telephone, and when he was sure of its merits he decided to exploit it in London. In looking around for a young man to handle this particular job for him, he discovered James A. Lighthipe, a native of Orange, New Jersey, who at the time was twenty-one years old. Preparatory to his work abroad under Edward Johnson, the young man was put through a course of training in the Edison Laboratories at Menlo Park, where he achieved the reputation of being an expert in preparing the little chalk cylinders that went into the telephone and, incidentally, became intimately associated with the "grand old man."

On October 11, 1879, the first successful incandescent lamp was made by Mr. Edison, and Mr. Lighthipe was "among those present" on this memorable occasion. No doubt Edison's associates in this adventure were not particularly enthusiastic over the long hours of tedious work which preceded the successful experiment, but there is not one of them now who does not consider October 11 a red-letter day in his calendar. Since then they have formed the Society of Edison Pioneers of which Mr. Lighthipe is a loyal member. About a month after this Mr. Lighthipe went to London and worked with the English Edison Telephone Company on the system that had been installed there. Later he was sent to Antwerp and spent about two years building the telephone system in Belgium, after which he returned to London and was associated with the British Insulite Company.

It was while working in Antwerp that he made a trip through Belgium on a high bicycle. The excursion was from Vervies through Aix la Chapelle, to Cologne, and this leisurely method of travel offered the same opportunity for close observation that was given Stevenson and Modestine in "Travels with a Donkey." This is characteristic of Lighthipe—he is never in a hurry but he always has an objective.

Within a short time the Edison Company started a factory at Ivry, near Paris, where Mr. Lighthipe helped construct the first Jumbo generators for the Milan Company in Italy. Also at this time experiments were conducted with the three-wire system just invented by Mr. Edison, and here Mr. Lighthipe developed the idea of the double bus-three wire system which was later installed in Wilmington. Following this he spent a year in Berlin, installing Edison plants in factories, and it was at this time that the first central station was achieved, being located near Unter den Linden.

All this took about five years, and in 1884 Mr. Lighthipe returned to America and engaged in the installation of Brush Arc Lighting sets. He worked in Trenton, Philadelphia and Wilmington and then was sent to San Francisco as superintendent of construction for the Edison Consolidated Electric Company, the predecessor of the present General Electric Company.

From an engineering standpoint, Mr. Lighthipe's principal contribution was his work in connection with the Folsom-



JAMES A. LIGHTHIPE

whose long record of constructive work in the solution of western engineering problems has won for him a unique position among the distinguished technical men of the West.

Sacramento transmission line which was the real beginning of polyphase generation and transmission. Soon after this a three-phase line was built from Santa Ana River to Los Angeles for the Southern California Edison Company, and Mr. Lighthipe had charge of this work, the first transmission line to be operated at 33,000 volts. In 1908 he was engaged by this company as Electrical Engineer, and has held the position ever since.

In the Edison company he is an institution—a friend of everyone, and known to the entire organization as "Daddy" Lighthipe. One of his many friends has written that to know him is in itself a liberal education.

Mr. Lighthipe is the originator of the idea of using a Terrill regulator for obtaining constant potential at the distributing end of a transmission line. In 1904, while working in Oakland, he wanted to make some experiments along this line, so a large synchronous motor was borrowed from John Britton and connected to a line from the Standard Electric substation. Then the operator at the other end was told to raise his voltage by shifting taps on the transformers, and all hands were greatly surprised when this could not be done. Mr. Lighthipe's paper on this subject appeared in the *Journal of Electricity* in July, 1904.

In his capacity of superintendent of construction, Mr. Lighthipe in 1890 built the Pico-Maple Ave. line, the first electric railway in Los Angeles, and soon after started the nucleus of the present United Railroads in San Francisco, as well as the systems in Sacramento, Stockton, Fresno and Bakersfield.

He is Fellow in the American Institute of Electrical Engineers and was vice-president of that body for two years. He is also an Edison Pioneer, and a member of the Southern California Academy of Sciences.

His human relationships have been as important as his business connections and his fellow workers have always known him as a friend and counsellor as well as a keen engineer and executive. He is one of those whom his associates delight to honor.

His hobby is pipe organs. In his home he has a fine organ which he plays very well but he claims that his interest in organs is scientific rather than artistic. When he goes to a large city for the first time, his natural impulse is to locate the finest organ there, and then he is not happy until he has had a chance to investigate its innards. As some men have scaled every high mountain in the country, Lighthipe has prowled around in every pipe organ that is large enough to be interesting. Prof. Eli Thompson is also an organ bug, and it was from this common interest that he and Mr. Lighthipe became intimate.

To James A. Lighthipe, whose pioneering spirit is responsible for many of our present practices in long distance transmission, this issue of *Journal of Electricity and Western Industry* is affectionately dedicated.

Activities of the West

A Business Man's Department Devoted to Events and Developments in Western Industrial Centers—Including News of Interest to Readers in Public Utility, Industrial and Trade Fields

Power Company Inaugurates Range Sale Campaign

Details of the Great Western Power Company's Plan to Increase Sales of Electrical Home Equipment

Electrical home equipment is to be sold under very favorable conditions to the consumers of electric energy generated by the Great Western Power Company, according to a recent announcement made by H. F. Jackson, general manager. This step is taken at a time when the general attitude of the purchasing public is to await more favorable market prices for all classes of products. The results of the recently inaugurated campaign will be watched with special interest. There is quoted below the letter issued by the power company to its district managers; the letter is complete except for a few details of interest only to company employees.

THE company proposes to purchase equipment and provide electric wiring under the most favorable terms possible and to resell the same to consumers on its lines at an exceptionally low price, giving to the consumer the full benefit of the company's purchasing power.

"The campaign will embrace the sale and installation, ready for service, of electric ranges, electric water heaters, tank covers and necessary wiring for connecting same to the company's lines. Substantially all standard makes of equipment will be provided at the request of the company, but the specific equipment listed herein, will be featured as covering a sufficient range to meet general requirements. If any specific type of equipment not listed herein is desired, special request for prices and delivery thereon will be made to the purchasing agent of the company; and such equipment will not be ordered or installed for the consumer until after a definite contract has been entered into and first payment made by the consumer.

"The equipment and wiring will be sold and installed by the company for cash accompanying the order or on time payments, but in the latter case 40% of the total contract price must accompany the order and the balance shall be paid at the rate of 5% per month without interest. If the purchaser at any time desires to pay up the balance then remaining on the contract, a cash discount of 10% will be allowed on such remaining balance so paid.

"In exceptional cases where premises are owned by the consumer or the owner of the premises is willing to guarantee the account, and when owner's credit is established, a smaller cash payment will be accepted by the company; but in all such cases special recommendation must be made by district managers and approval of the general sales manager secured in each case before the lesser initial payment is accepted.

"The prices given herein are unusually low and are exclusively for bona fide consumers on this company's lines and must not be given to others. Sales to others than consumers on the company's lines will not be made except under unusual conditions and if made at all, the prices listed herein must be increased in every such case 50% and the sale made for cash accompanying the order.

"Prices for equipment and wiring for bona fide consumers on this company's lines will be as follows:

	Cash	Time Payment
A. Electric Ranges:		
Westinghouse		
219 B—Semi Auto.	\$ 95.00	\$104.50
Westinghouse		
319-B—Full Automatic	135.00	148.50
Hughes—Hotpoint or Edison Open Coil Element, Non-Auto.		
R-63 Nickel Plate	135.00	148.50
R-67 Nickel Plate	161.00	177.10
R-83 Plain	152.00	167.20
R-85 Plain—Less shelf	115.00	126.50
R-85 Plain—With shelf	122.00	134.20
R-87 Plain—Less shelf	125.00	137.50
R-87 Plain—With shelf	132.00	145.20
Hughes—Hotpoint or Edison, Enclosed Coil Element		
R-63 Nickel Plate	140.00	154.00
R-67 Nickel Plate	168.00	184.80
R-83 Plain	159.00	174.90
R-85 Plain—Less shelf	120.00	132.00
R-85 Plain—With shelf	127.00	139.70
R-87 Plain—Less shelf	132.00	145.20
R-87 Plain—With shelf	139.00	152.90
Simplex Non-Automatic, Enclosed Element		
25	102.00	112.20
27	118.00	129.80
29	166.00	182.60
B. Water Heaters:		
Wessex 1500 watt outside circulating type, automatic, including Johns-Manville single ply or American Insulex tank covering installed on consumer's boiler. (Boiler to be furnished and installed by consumer.).....	55.00	60.50
Wessex 5000 watt outside circulating type, automatic including Johns-Manville single ply or American Insulex tank covering installed on consumer's boiler. (Boiler to be furnished and installed by consumer)....	70.00	77.00
Thermelect 1500 watt Immersion with boiler complete	70.00	77.00
C. Wiring and installation of range, including outside service		
	Actual cost to Company to be determined and reported to consumer before making contract price.	Actual cost to Company plus 10% to be determined and reported to consumer before making contract and included in contract price.
D. Wiring and installation of water heater, including outside service if necessary.....		
	Actual cost to Company to be determined and reported to consumer before making contract and included in contract price.	Actual cost to Company plus 10% to be determined and reported to consumer before making contract and included in contract price.
E. Wiring and installation of both range and water heater, including outside service.....		
	Actual cost to Company to be determined and reported to consumer before making contract and included in contract price.	Actual cost to Company plus 10% to be determined and reported to consumer before making contract and included in contract price.

"It is contemplated that the 1500-watt automatic heater may be served on separate meter with flat rate provided on Company's existing schedule or on the block rate schedule through the meter supplying the range and other domestic service.

"If the 5000-watt heater is used it must be connected to the range circuit through double throw switch wired so that the range and water heater cannot be put into service simultaneously (a special flush double throw switch is preferable for this purpose and the cost of the same shall be included in the installation cost specified above). If the 5000-watt heater is used, the energy consumption thereof, together with the energy consumed by the electric range and the consumption for general domestic purposes, will be measured on a single meter and charged on the block system. (Schedule C-1.)

"It is believed that because of quicker recovery in the water heater system and better control of electric bills by the consumer, the 5000-watt heater under the block system will be more economical and therefore preferred by consumers.

"Arrangements will be made * * * with at least one electrical contractor in each district for the necessary wiring and installation of equipment * * *.

"We will continue servicing electric ranges and water heaters at no cost to the consumer except that material used will be charged for at our cost price.

"Factory guarantees will be taken advantage of at all times and the consumer allowed the benefit of all such transactions.

"It must be strictly understood that we do not commit ourselves to an indefinite policy of free service and that we may at any time discontinue free servicing of equipment or may charge for labor involved as well as material."

Washington Berry Growers' Association Purchases Cannery

The sale of the H. A. Baker, Inc., cannery at Sumner, Washington, to the Washington Berry Growers' Association of Sumner, for a consideration of \$115,000, closed recently, is one of the largest transactions of the kind ever made in the Puget Sound section. The

The Modesto-Turlock Irrigation District Purchases Hydroelectric Power Site

Agreement Will End Condemnation Proceedings.—Pacific Gas & Electric Company Receive Electric Energy in Payment

Kilowatt-hours instead of dollars is the measure of value agreed upon by the Pacific Gas & Electric Company and the Sierra & San Francisco Power Company with the Turlock Irrigation District and Modesto Irrigation District, for the purchase by the districts of the LaGrange power house and other property owned by the utilities. The two irrigation districts are now engaged in building the San Pedro dam across the Tuolumne River and the impounded waters will submerge the LaGrange system owned by the Sierra and San Francisco Power Company under lease to the Pacific Gas & Electric Company.

Under the terms of the agreement the Sierra Company purposes to sell to the irrigation districts the property in-

volved for 10,000,000 kilowatt-hours of electric energy per annum for a term of 25 years. This amount of electricity is to be developed by a hydroelectric power plant which the irrigation districts plan to build at the San Pedro dam. The LaGrange plant is not to be disturbed until the new plant is in operation, the construction of which it is estimated will take four years. In asking for confirmation of this agreement both parties joined in stating that it will be to the best interest of all concerned, including those now served by the LaGrange system. It is stated that the agreement when ratified will lead to the dismissal of condemnation proceedings begun by the districts and will avoid possible costly litigation.

matter was handled by J. L. Bradley, manager of the association. The cannery was built in the spring of 1920. It is of pressed brick and cement construction 320 x 80 ft. The purchase includes thoroughly modern canning machinery, a brick boiler house, a large brick warehouse, with an electrified railroad spur running between it and the cannery, and three acres of land. Running full blast, the plant employs 200 people. The new owners control between 600 and 700 acres of berry-producing land in the Puyallup Valley.

Kettle Falls Site Purchased

Washington Water Power Company Makes Announcement.—Project to Develop 130,000 Hp.

The Washington Water Power Company, in a circular letter to its stockholders sent out July 15, announced the purchase of the Kettle Falls power site on the Columbia River 75 miles north of Spokane. This site is capable of developing 130,000 horsepower at the low water flow of the river, and as this period on the Columbia is generally several months later than on the Spokane river, where the company's pres-

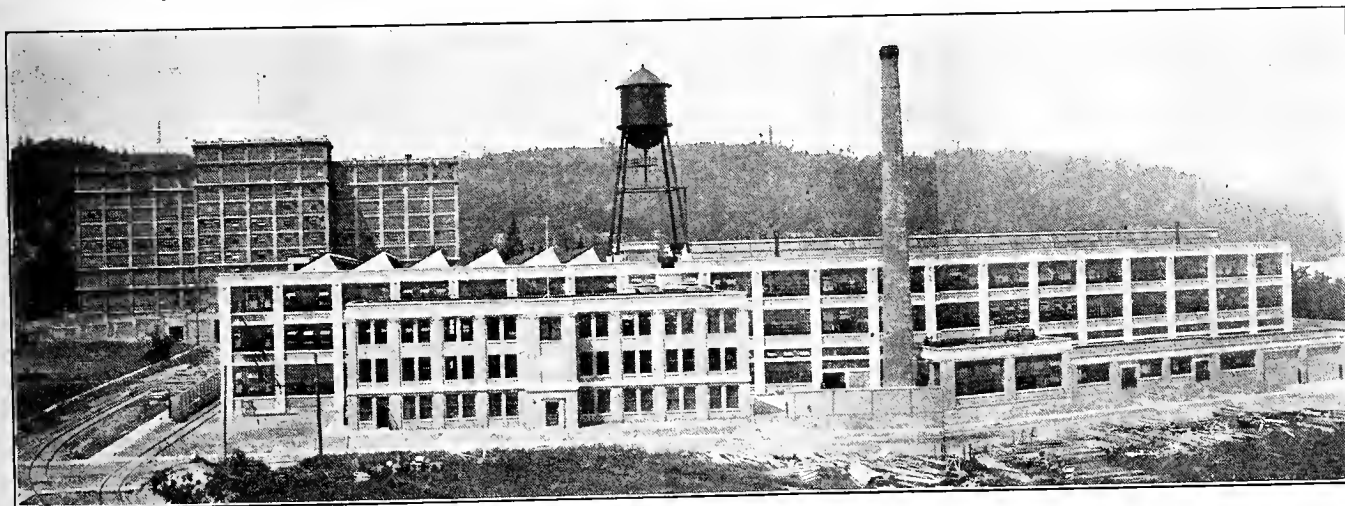
ent plants are situated, the acquisition of the property is advantageous.

Kettle Falls of the Columbia lies between the towns of Marcus and Kettle Falls. There is a fall of 35 feet in a comparatively short distance which can be increased to 75 feet by dams. The power can be developed in successive stages starting with a unit of 25,000 horsepower. The summer flow is sufficient to provide extra power for irrigation pumping purposes, a use which promises to become quite general throughout the district.

The consideration for which the site was acquired from the Granby Consolidated Mining, Smelting and Refining Co., Ltd., was not made public, but as the full capacity of the falls is to be developed, the cost per horsepower will be quite low, it is understood.

When the Washington Water Power Company started the development of the upper falls of the Spokane river in the center of Spokane last fall, it began the utilization of its last undeveloped water power. The Kettle Falls site is acquired for the purpose of insuring against future needs.

The application has been filed with the Federal Power Commission.



Portland, Oregon, is rapidly forging ahead as an industrial city. During the past year a goodly representation of industrial plants have located here. The two plants shown are those of the American Can Company and the Montgomery-Ward Company. The substantial character of these buildings indicates the faith these companies have in the future of the Rose City.

Commercializing the Cooperative Campaign Idea

Reference to an advertisement that appeared on the front cover of Electrical Merchandising for June 1, 1921, and to the subsequent action of the California Electrical Cooperative Campaign, was made on page 82 of the July 15th issue of Journal of Electricity and Western Industry. In full justice to all people concerned in this matter, further statements of the case should be made and the Journal of Electricity and Western Industry takes great pleasure in making the following additional statement of the situation: The immediate response from the manufacturer and particularly from the manufacturer's Pacific Coast agents, when the situation was called to their attention, is to be commended. Under signed statement, the Bryant Electric Co., in the advertising columns of the Journal of Electricity and Western Industry for June 1, 1921, on page 28, states how they are squarely behind the movement of the California Electrical Cooperative Campaign, and the Pacific Coast representative, Mr. H. E. Sander-son, has done everything possible to right the situation. It is safe to say that manufacturers generally will be careful that situations similar to this do not occur in the future, and also that the electrical press will do whatever it can to see to it that advertisements appearing in its columns will respect the high ideals of the Cooperative Campaign idea. We commend everyone for the earnest and sincere effort displayed in righting a situation that will never again occur.

It is fully recognized by all parties that the incident above alluded to arose through lack of understanding concerning the campaign ideals covering the home electrical and not through any deliberate attempt to violate the principles of ethics of the campaign.

League of Municipalities, Southern Branch, Discusses Power Problems

At a meeting of the official representatives of forty-five cities and districts of southern California, water and power problems were discussed freely and preliminary plans were formulated much the same as the northern branch of the League of Municipalities adopted some time ago.

Resolutions urging the municipalities to make applications for benefits from the Colorado River development, and seeking to exclude private interests from the Boulder Dam project were adopted.

The City of Los Angeles denied any attempt to grab power—a charge appearing in the public press recently; they assert through their chief electrical engineer, that the charges are without foundation and not according to facts. Engineer Scattergood presented an official communication from the Board of Public Works of Los Angeles, which gave a large part of the details of the fundamental plans for power and water for the City of Los Angeles, some of the work dating back to 1907. He explained the interest the city had in the proposed Government project at Boulder Dam on the Colorado River, and outlined the conditions

Convenience Outlet Campaign Actively Supported

California Electrical Cooperative Campaign Obtain Results Through Educational Publicity. — Report of Recent Activities

Investigation has shown that the amount of building activity in the southern part of the state is more than double that of the northern part; also that the greater part of the residence wiring in the south is done by contractors whom the Campaign has little opportunity to assist, either by group or by personal contact. In the north the residence wiring is largely done by non-association contractors under the supervision of small building contractors who do not require the services of an architect. In consideration of this condition, and with a desire to further the convenience outlet campaign, it was decided to discontinue the service of one field man in the north and divert that expense to a direct appeal to the public. The entire time of the electric equipment expert is devoted to calling on architects, builders and prospective home owners. During April, May and June the field representative in the north has called upon 157 individuals directly engaged in the building industry, together with many electrical contractors and dealers, and has attended their meetings.

Replies to a questionnaire from manufacturers indicate that the result of

the emphasis placed upon convenience outlets by the campaign is an increase of 36 per cent in sales during the past year.

In an effort to bring about competition between home builders, the Campaign field man attaches a heavy cardboard sign reading "This Building Is Equipped With Electrical Convenience Outlets" to the front of buildings where there is at least one convenience outlet in each room. Buildings not completely equipped are not posted, and prospective home buyers visiting the different buildings for sale are taught to look for the outlets. This has served to create a demand for modernly wired houses. In order to further impress upon the public the necessity of convenience outlets and modernly wired homes, lantern slides have been shown in motion picture theaters in residence sections. The slides prominently feature the duplex flush receptacle with a stand lamp attached, and have the slogan—"Make Your Home Modern with Electrical Convenience Outlets." It is estimated from quotations received from residence district theaters, that this story will be told to at least 40,000 people per month.

under which the small municipalities might benefit also. His general defense of the charge of "grab" on the part of Los Angeles was based on the published tables of present and proposed hydroelectric developments in Southern California, which he asserted were subject to verification from several sources and were considered as substantially correct by all authorities.

Vancouver "Electrical Home" Dinner

The recent "Electrical Home" dinner, at which some 125 were present, was held under the auspices of the British Columbia Electrical Cooperative Association and the Vancouver Electric Club. They had as their guests a large number of architects and home contractors. W. G. Murrin, assistant general manager of the British Columbia Electric Railway Company, occupied the chair, and the speakers were John R. Read, local manager of the Canadian Westinghouse Co., who spoke on the Electrical Home; C. C. Carter, electrical contractor, who spoke on Convenience Outlets in the Electrical Home; and James Lightbody, publicity manager of the British Columbia Electric Railway Company, who spoke on Illumination in the Electrical Home.

One of the features of the evening was the sketch put on by E. E. Walker, sales engineer of the British Columbia Electric Co., who took the part of a home owner, and W. C. Mainwaring, district sales manager of the Northern Electric Co., who took the part of the architect designing the new home. The sketch forcibly brought out the need of education on the part of the general public of the necessity and convenience of adequate electrical wiring in the home.

The architects were headed by A. L. Mercer, president of a local architects' association, who replied on their behalf and assured the electrical men of their full cooperation. During the evening lantern slides of the various California Electrical Homes were shown and the amazing progress of this new idea described. It is expected that the building of electrical homes will be much hastened by the cooperation between electrical contractors and architects, such as was begun under such pleasant conditions at this dinner.

California Association Starts Reorganization of Local Sections

The California Association of Electrical Contractors and Dealers, under the able leadership of Clyde L. Chamblin, president, and J. W. Redpath, secretary, is overhauling the various sections of the Contractor-Dealers' Association throughout California. These local sections have in the past been very active in handling local problems and in forwarding the general development of the Association. The idea immediately ahead is to bring this action into general alignment so as to bring the whole force of the Association into still further development of Association activities, with particular reference to more efficient merchandising methods and lowering cost to the consumer in the matter of electrical installation.

In line with this latter policy announcement was made by Mr. Chamblin at a recent meeting of the San Francisco Electrical Development League, that recent lowering in construction costs of electrical work had much exceeded the lowering of labor costs, so that the public might profit to the fullest extent in these economies.

Wireless To Aid the Farmers

Seattle Market Reports to be Sent to Agricultural Districts Daily

In conjunction with local farm bureaus, Director E. L. French of the State Department of Agriculture is working out a system for the sending of Seattle market reports by wireless to each farmer in the producing sections of the state, daily, without cost to the farmers. Director French's scheme is to wireless the quotations from a central sending station in Seattle to all amateur stations or stations maintained by farm bureaus, to pick up under an arrangement that they shall be relayed by rural telephones. Efforts are being made by the state department to induce the Federal Bureau of Farm Markets to establish and maintain the Seattle sending station as the local application of the plan recently adopted for sending out national livestock quotations from the eastern stations.

New Hydro Project in Salt River Basin

Engineers of the U. S. Geological Survey are to investigate and report on another possible hydroelectric development in the Salt River basin. Eugene C. La Rue, chief of the bureau for Southern California with offices in Pasadena, has been getting his share of the flood of applications for filings on water power sites and this trip to Salt River basin is typical of the others already reported upon this year. He and Assistant Engineer Sopp will drive by auto through the mountain districts in order to thoroughly cover the territory involved.

This is the sixth investigation to be made by this office recently and the projects range in size from 500,000 hp. down.

Edison Clubs Growing Rapidly

W. G. Partridge, editor of Redondo Steam Plant "Edison Vibrations," has recently made a visit over the Southern California Edison system. About three months ago Mr. Partridge and others at the Redondo Steam Plant were instrumental in forming Edison Crescent Bay Club No. 1, an organization of company employes in and about Redondo, and devoted to the betterment of employe welfare and at the same time to the increasing of employe effort in behalf of their company. The movement has spread rapidly, and speaking of the recent trip made by Mr. Partridge, he had the following to say:

"Recently your editor took a trip with our Director of Education, Tommy Thomson, up north in the San Joaquin Valley for the purpose of assisting a few of the new Edison Clubs at their opening meetings. Monday night we were at Visalia, with Visalia Edison Social Club No. 6; Tuesday night at Porterville with Porterville Edison Club No. 4, and Wednesday night at Lindsay with Lindsay Edison Club No. 5. Delano in the same vicinity has organized but were not to have a meeting this week.

"A very large percentage of the employes in each district have become members of the clubs and all seem to be full of "pep" and ready to go, as soon as they get their equipment. It's going to make the members of the Mother Club—Edison Crescent Bay No.

1—hustle to keep up with these new ones. They already have a league base ball line-up with six teams and are planning to have their winning team play it off with some club team from the south. They are arranging for a joint picnic of all clubs in the valley for Labor Day, and they are all going in strong for the educational meetings, following our lead of starting with the question box. Here's success to all of 'em."

Contractors and Dealers of Oregon Plan Intensive Work in the Coming Fall

S. R. Sroufe, the newly elected president of the Contractor-Dealers' Association of Oregon, has started very energetically to work in the organizing of fall campaign activities for his Association. He typified this awakened activity by setting loose a number of heavy caliber firecrackers at the recent meeting at Eugene of the annual meeting of the Association. Oregon is beginning to feel the effect of the new Northwest Electrical Service League, under the able leadership of Stephen I. Miller, and in these activities such men as S. R. Sroufe, president, J. R. Tomlinson, secretary-treasurer, and F. R. Whittlesey, secretary of the Association, will give their most active and enthusiastic support.

Advisory Committee. California Electrical Cooperative Campaign Meets in Los Angeles

A meeting of the advisory committee of the California Electrical Cooperative Campaign is called for Monday, August 1st, at the Jonathan Club in Los Angeles. It is understood that at that time there will be considerable discussion as to whether the offices of the Pacific Coast Division, N. E. L. A., and the present offices of the Campaign should not be combined in one grouping. A committee which has been investigating this subject has found very suitable offices at the Rialto Building, San Francisco, on the seventh floor, but final approval for the change will be postponed until the Los Angeles meeting.

Montana Association of Electrical Contractors and Dealers Plan Fall Activities

James H. Mills of Great Falls, Montana, the recently elected president of the Electrical Contractors and Dealers' Association of Montana, is planning the new activities of the association for the fall with a view toward bringing to bear the very best effort of the association in forwarding the business activities of the electrical industry in the state of Montana. Due to the slackening of the mining activity, much of the construction work in the state has ceased, and as a consequence a higher, more efficient type of salesmanship is necessary to promote the merchandising of things electrical in the state, and Mr. Mills, who for many years was electrical inspector of the state and a graduate of the state university, will bring to bear upon the problem years of careful study in all phases of this activity, with which he is very familiar.

Skagit River Power Project

Ordinance for \$5,500,000 Bond Issue Passes Seattle Council—Details of Engineering Work

An ordinance providing for the issuance of \$5,500,000 worth of bonds to finance further development of the Skagit power project has been recently passed by the Seattle city council. According to estimates prepared by city engineer A. H. Dimock, this sum will cover the cost of the following work on the Skagit project:

Twenty-five mile railroad from Rockport to the power site; sawmill capable of cutting 25,000 feet of lumber daily; power plant of 3,000 hp. for construction purposes; timber crib dam for diverting the flow of the river from the site of the concrete dam (to be built when necessary); tunnel leading from this dam and conducting water to the power house, 21 feet in diameter, capable of carrying sufficient water to develop 112,500 hp.; three penstocks and valves conducting water from the tunnel to water wheels, each furnishing sufficient water to develop 37,500 hp., or a total of 112,500 hp.; a power house, for the installation of three units of 37,500 hp. each; two units consisting of water wheels and generator each; a transmission line capable of delivering 112,500 hp. from the plant to the city of Seattle; six substations in the city, for the transformation of this power; additions to the distribution systems in the city of Seattle, to enable the municipal lighting department to utilize the current thus furnished.

The bill was only recently introduced in the council and the passing comes after a favorable report of the public utilities and the finance committees.

British Columbia League Starts Campaign with Renewed Activities

The British Columbia Electrical Cooperative Campaign League, due to the arrival of R. E. Chatfield, the newly appointed executive manager, has started its fall activities in an enthusiastic manner. A number of notations have appeared in the columns of the Journal of Electricity and Western Industry regarding the cooperative campaign work at Vancouver. Here, however, is the beginning of real constructive activity in the way of an organized effort under definite leadership, and the working out of this Cooperative Campaign idea in British Columbia will be followed by readers generally throughout the West with a very great deal of interest.

California Highway Bonds Find Ready Market

An offering of \$4,878,000 of 5% per cent California Highway bonds made on July 15, was oversubscribed on the same day that they were offered. The bonds sold at a premium of \$19,550. The speedy sale, as compared with the great difficulty or inability to sell bonds in previous years is due to the higher rate of interest on the issue recently sold. Interest rates are now determined for each issue according to market conditions as determined by a commission.

Meetings of Interest to Western Men

Pacific Coast Division, N. E. L. A. Holds Executive Meeting and Decides on Future Policies

A. B. West, the newly elected president of the Pacific Coast Division, N. E. L. A., called an informal meeting of the Executive Committee recently at the Palace Hotel in San Francisco. The question of activities for the coming year was brought up, and it was decided that a number of public industrial conferences be held throughout the state, giving the same heavy emphasis on industrial matters as was brought out at the recent Del Monte gathering of the Association. There was also considerable discussion as to whether the Pacific Coast Division, N. E. L. A., should not be organized into an association to be known as the Pacific Coast Electrical Association, with which is affiliated the National Electric Light Association, and in such reorganization to open the Association to all branches of the industry with equal rights as to office, membership on Public Policy Committee, Executive Committee, and other matters. In regard to the budget for the forthcoming year, there has been some question in eastern headquarters as to whether this section would be allowed the 50 per cent pro rata voted some time back, and on this question Mr. West has taken a very decided stand for the Pacific Coast Division. The letter which he has written to the National headquarters at New York is as follows:

"I am in receipt of your letter of July 11th. We will make every effort to have the Pacific Coast Division budget in your hands shortly after the first of August.

"There is no question but that the necessary expenses of our Division will equal the full one-half of the Class A and Class B membership dues paid to the National Association, and the Division will expect that this will be approved without question. I think that we might as well be frank in the matter. The Pacific Coast Division is one of the most active, as you know, in the whole country, and it will not acquiesce in having its work crippled through the National Committee paring down its budget. Last year we consented to such a reduction in the budget by reason of the fact that we understood that the National Committee's finances were in a critical shape, by reason of a greatly enlarged budget being undertaken in advance of the period when the additional revenues from increasing the member company dues would be available. We understood, however, that this year the situation would be different.

"If it is proposed to repeat last year's action, I predict that it will result in steps being taken by the Pacific Coast Division to retain one-half of Class A and Class B membership dues before the balance is remitted to the East. I am writing this letter as it will be impossible for me to appear personally before the Executive Committee

meeting to be held about the middle of August. Furthermore, I do not think that the Pacific Coast Division should be put to this large expense in order to obtain the approval of its budget. You are thoroughly familiar with conditions in our Division, and I believe can explain to the Committee the importance of the budget as prepared, being approved without question."

San Francisco Electrical Development League Forwards Civic Activities

In line with its fixed policy of looking into all activities of civic importance, the San Francisco Electrical Development League held a meeting Monday, July 18, devoted to this subject, at which Chief O'Brien of the San Francisco Police Department addressed the meeting. Mr. O'Brien brought forcefully home how the citizen can help preserve order in a community, first by proper attention to seeing that everything is safely locked up and put away, and secondly by notifying the police department of suspicious looking characters and any out-of-the-way thing that may happen in the daily life of the citizen. The meeting of Monday, July 25, was devoted to state problems, and Warden Johnston, the well known warden of San Quentin state penitentiary, spoke. Mr. Johnston has been a great advocate of the indeterminate sentence for prisoners and he brought home forcefully to his audience how hope was instilled and citizenship generally raised by the indeterminate sentence, and in those cases where the full force of the law must be brought to bear the prisoner was given longer sentences than prevailed under the old system. Ralph Wylie, chief of the Department of Electricity of San Francisco, presided over the first meeting, while Robert Sibley, editor of Journal of Electricity and Western Industry, presided over the second.

The Los Angeles Electric Club Adjourns for Summer Session

The Los Angeles Electric Club, which has had a very phenomenal growth during the past year and attained a membership of almost seven hundred, has adjourned for the two summer months. The activities of the club have best been shown in the enthusiastic manner in which they got behind the sale of power company securities, and the success of the Electrical Development Army in this work.

The results of the sales campaign are quoted from "Sparks":

Battalion	Stockholders No. of New	Par Value of Subscribed For Securities
Jobbers	581	\$82,400.00
Manufacturers	376	82,400.00
Contractor-Dealers	177	29,400.00
	1,134	\$194,200.00

"The result of the Electrical Development Army is more than gratifying. A good 'job' has been done, and done well. But—herein lies the good of the cause: It matters not that we have sold 1,134 new subscribers a total of \$194,200.00 worth of electrical securities, but it is of great importance that we have sold 1,134 people in Southern California the Electrical Development Idea, the Self-Interest Story."

Electrical Contractors and Dealers Hold Sessions at Catalina Island

At the June meeting of the Southern District of the California State Association of Electrical Contractors and Dealers, which took place at Santa Barbara, California, there were over 110 in attendance. The Catalina meeting, which is to take place on July 30, bids well to far exceed the Santa Barbara meeting in attendance, as something like 150 seem sure of making the trip as these forms go to press. There will be members in attendance from San Diego to Santa Maria. Clyde Chamblin and J. W. Redpath, president and secretary of the California Association, are both in attendance.

The San Francisco Section of the American Society of Mechanical Engineers, under the leadership of E. C. Hutchinson, chief engineer of the Pelton Water Wheel Company and chairman of the local section, is already planning a helpful series of meetings for the coming months, which will include a discussion of the natural gas burning steam electric power plants at Bakersfield and Coalinga oil fields operated by the San Joaquin Light & Power Corporation, as well as a number of other topics particularly concerned with the operation of the Diesel engine aboard ship.

The Portland Section of the American Institute of Electrical Engineers at the annual meeting elected the following officers for the 1921-1922 season: Chairman, W. C. Heston; secretary, D. W. Proebstel; executive committee, R. R. Robley and J. E. Yates.

The Ogden Chapter of the American Association of Engineers will hold weekly luncheons, starting Thursday, July 21. The luncheons will be held in the banquet room of the Weber Club.

The Denver, Colorado, Section of the American Institute of Electrical Engineers has just elected the following officers for the ensuing year: chairman, Burton C. J. Wheatlake, manager of the supply department of the General Electric Company; vice-chairman, Edward A. Phinney, vice-president and general manager of the Jefferson County Power and Light Company; secretary-treasurer, Robert B. Bonney, educational director of the Mountain States Telephone and Telegraph Company. At the meeting Prof. L. D. Crain of the mechanical engineering department of the Colorado Agricultural College, spoke on electricity on the farm.

COMING EVENTS

INTERNATIONAL ASSOCIATION OF MUNICIPAL ENGINEERS
Colorado Springs, Colo.—Sept. 6-9, 1921

AMERICAN ASSOCIATION OF PORT AUTHORITIES
Annual Convention—Seattle, Wash., Oct. 11-14, 1921

AMERICAN ASS'N FOR ADVANCEMENT OF SCIENCE, PACIFIC COAST SECTION
Berkeley, Cal., Aug. 4 and 5, 1921

Manufacturer, Dealer, and Jobber Activities

The Benjamin Electric Manufacturing Company of Chicago has recently put on the market a line of model sanitary food receptacles which are watertight and odor proof. The contents are kept hermetically sealed by close fitting cover with rubber gasket held securely by a positive pressure aluminum clamp. This line is marketed under the name of Kelly-Kontainer.

The General Electric Company will have a large exhibit, comprising a variety of its products at the seventh National Exposition of Chemical Industries to be held in 8th Coast Artillery Armory, New York City, Sept. 12 to 17.

The Packard Electric Co. of Warren, Ohio, announces the appointment of Jos. C. Bowman as advertising manager vice G. P. Blackiston, resigned.

The Riddle Electrical Co., 114 North Catalina Ave., Redondo, Cal., claims the distinction of being the largest electrical equipment concern in Southern California outside the city of Los Angeles. Mr. Riddle has recently purchased the electrical business of Sprenk & Sons with whom he was previously connected. The company will specialize in power plant and other heavy electrical installations.

Rathbone, Sard & Co., of Aurora, Ill., manufacturers of the "Acorn" line of ranges, recently announced the production of a combination electric and coal range. Some of the features of the range are: four electric hot plates; two-hole cooking top; electric oven; fire box for coal, coke or wood; waterback for coil linings; high shelf with enamel splashers; mercury thermometer; General Electric sheathed wire units.

The Continental Pipe Manufacturing Co. of Tacoma, Wash., recently received an order for four miles of 8½ in. inside the diameter, wood stave pipe from the Parker-Young Company of Vermont. The order is one of the largest ever received in the Northwest, and marks an important step forward in the return to normalcy in the lumber industry of the Northwest. Joe L. Long, president of the company, stated that the choice of the Douglas fir wood stave pipe by the engineers of the eastern company was made upon the record of performance of other installations of the Tacoma company in Vermont.

The Western Electric Company has announced a change in the organization of the Denver Branch office. Tyler L. Holmes, who has been general manager of the Denver plant, has been transferred to an executive position in the eastern office of the company. The Denver Branch will divide into two departments under separate heads covering the work formerly done by the main organization in both Denver and Salt Lake City. A. C. Cornell has been appointed in charge of the supply department and will also head the supply department of the Salt Lake branch. The telephone department, which will be separated from the sales organization, will be headed by Harry C. Argabrite, who will also have the managership of the Salt Lake branch.

L. L. Collier and B. W. Mullan have formed a partnership under the name of the East End Electric Arc & Acetylene Welding Company, with a shop located at 212 East Main Street, Walla Walla, Wash.

The Holabird Electric Company, with offices in San Francisco and Los Angeles, will be sales representatives for the Weber Dependable Wiring Devices, Boston, Mass. Their interests will be under the direct supervision of H. A. Sayles, secretary of the Holabird Electric Company.

The Coast Equipment Company, with offices in San Francisco, Los Angeles, Portland and Seattle, has been appointed Western distributors for the Mechanical Appliance Company, of Milwaukee, Wis., and also Western agents for the Ridgway Dynamo & Engine Company of Ridgway, Pa.

Barthold-Strecker Company is the name of a newly organized firm now located at 104 Pine Street, San Francisco, with a fine display of engineering instruments and equipment. Both Mr. Barthold and Mr. Strecker are well known through their extensive experience in these highly specialized lines.

The Edison Electric Appliance Company's factory at Ontario is doubling up on orders since the recently made price reduction in heating appliances, and Mr. Richardson is quoted as saying the factory will very soon be on its full time, full help basis again.

The Western Electric Company has recently put into operation an elaborate direct-by-mail selling service, available to their jobbers in personal solicitation of their prospects.

The Pacific Car & Foundry Company, Renton, Wash., recently secured a contract from the Northern Pacific Railroad Company for the construction of 1,000 box cars and gondolas, involving an expenditure of about \$300,000. C. D. Colvin, vice-president of the company, states that the contract is one of the largest of its kind ever handled in this district, and indicates a revival of nor-

mal business conditions. About 300 men will be employed in the work.

M. W. Wheeler has recently been appointed Western distributor of the Airway Electric Appliance Corporation, of Toledo, Ohio, manufacturers of the "Airway" vacuum cleaners and washing machines. Mr. Wheeler's local address is 220 Builders Exchange Building, San Francisco.

The Majestic Electric Development Company, through its sales manager, T. D. MacMullen, is adding a statement to all advertising literature sent out by the company that should be helpful in forwarding the convenience outlet campaign. The statement appended is as follows: "The more convenience outlets installed, the greater the sale of electrical appliances." This will appear on every circular letter that is being issued, and will be included in all their newspaper and magazine advertising. The newspaper advertising will appear in from one to three newspapers in the various larger cities throughout the country and will run from early in September to the end of the year.

The Pacific Foundry Company, of San Francisco, iron founders and metallurgists and manufacturers of "Corosiron," have recently issued a descriptive, Lefax size, bulletin describing "Corosiron" and the products manufactured from this acid-resisting material. The pamphlet also contains a number of carefully selected Lefax tables of value to the engineer using their products.

The Northwest Envelope Manufacturing Company, recently incorporated, has selected Seattle as the site for its proposed factory. Bert P. Boles, president and general manager of the company, announces that the company has acquired 10,000 square feet of floor space at 617 Western Avenue, and machinery will be installed immediately. Offices will be established in the chief cities of the Northwest and Pacific Coast.



"Make way for a little stranger!" Thus said J. J. G., a well known leader in a supply department for a prominent eastern manufacturing concern, when he stepped forth and took all the money from the crowd shown here assembled. Now that this picture has been outlawed, due to the kindly veil of time represented by the passing of two years, we publish it. It is a scene in the high Sierras along the bristling shores of the San Joaquin river. With his back to us is Emory Wishon and facing us is Ike Alexander, while Glenn Arbogast, R. M. Alvord, Harry Noack and other prominent figures in western industry are to be noted. And the "little stranger" on the left, intently watching the game and stooping over toward Glenn Arbogast, is our friend J. J. G. Can you guess who he is?

Rey E. Chatfield, formerly with the Federal Board for Vocational Education and recently on the faculty of the summer session of the University of California at Berkeley, has accepted the position of executive secretary for the British Columbia Electrical Development Association with headquarters at Vancouver. Mr. Chatfield goes to his new position well equipped for co-operative campaign work in that he has had eight years of experience in the small store, four years of which time he was manager of two small stores.



REY E. CHATFIELD

He was a graduate of the University of California with the class of 1914 where he took the course in the College of Commerce under the direction of Professor Henry R. Hatfield, who has strongly recommended him for the new position in Vancouver. The British Columbia Electrical Development Association has been well under way for some months past and with definite executive management now available its progress will be watched with a great deal of interest by members of the industry throughout the West.

B. E. Drayer, secretary of the American Association of Engineers, is expected in San Francisco during the first three days of October. Mr. Drayer has been very active in Association matters and it is expected that he will spend some time in visiting the various local sections of the Association in Western centers.

M. H. Aylesworth, executive secretary of the National Electric Light Association with headquarters in New York, has returned to his eastern headquarters after a visit in Pacific Coast centers. While in the West he made a number of notable addresses relative to the service the public service industry is rendering and the intimate part the National Electric Light Association is playing in this work.

Theodore Burger, formerly with the Western Electric Co. of San Francisco and later with Baker-Joslyn Co. in Los Angeles, has joined the staff of the Society for Electrical Development, Inc. with headquarters in New York City. Mr. Burger, now associated with Mr. Goodwin, both of whom are western men, will undoubtedly have broad opportunity of displaying the western vision of things electrical which he has so ably mastered during a long residence in the West.

Personals

B. T. Ergenbright, who has been manager for the Southern Sierras Power Company at Victorville, California, has resigned to undertake the managership of the Bear Valley Utilities Company which will handle all power, light, sewage, water and telephone utilities of the valley.

G. R. Ramsay, city engineer of Orlando, Florida, is in California making a thorough study of the highway construction methods throughout the state.

George W. Fitch, field secretary of the California Manufacturers' Association with headquarters in Oakland, California, has returned from a trip covering the greater portion of the state of California in the interests of his association, which now numbers over 1100 industries of California.

I. B. Hobshaw, consulting and technical chemist of Valparaiso, Chile, who has been studying mill engineering and construction throughout the country, was a recent visitor to the Pacific Coast.

Marshall J. Maxfield, formerly with the Mt. Whitney Power and Electric Company of Visalia, Cal., and more recently with the department of electrical engineering of Pennsylvania State College, has been appointed director of laboratory instruction, department of industrial and electrical engineering of the Pratt Institute, Brooklyn, N. Y. He will assume his new duties September 1st.

Harold G. Bowen has been appointed engineering officer at the Mare Island Navy Yard. Commander Bowen succeeds Captain M. E. Reed, who was recently appointed senior aid to the Commandant in charge of industrial activities.

C. A. Bigelow, treasurer of Stone & Webster Co., Inc., with headquarters at Boston, Mass., is a recent Pacific Coast visitor.

James H. McGraw, president of McGraw-Hill Company, Inc., of New York City, has returned to his New York headquarters after a visit of four weeks in California, where he spent his time in resting and in visiting typical engineering activities and organizations in this section of the country.

W. K. Tucker, a graduate of the University of California with the class of 1910, has left the employ of the Hercules Powder Company as chemical engineer, where he has been engaged in eastern business centers for them for the past several years, to come again to California and settle in the San Francisco Bay district.

Henry E. Jackson, director of the National Community Board, an organization representing sixteen departments of the United States Government, recently gave an interesting talk before the Commonwealth Club of San Francisco on the subject of a new industrial revolution, in which he forcibly brings out the fact that there is a solution for every industrial problem provided the community itself handles the question under a public community committee.

Frank Bonner, chief engineer of road construction for the U. S. Forest Service with headquarters at Washington, D. C., is a recent Pacific Coast visitor. Mr. Bonner visited Los Angeles, San Francisco and other cities, which included a lengthy stay in his old home town, Missoula, Montana.

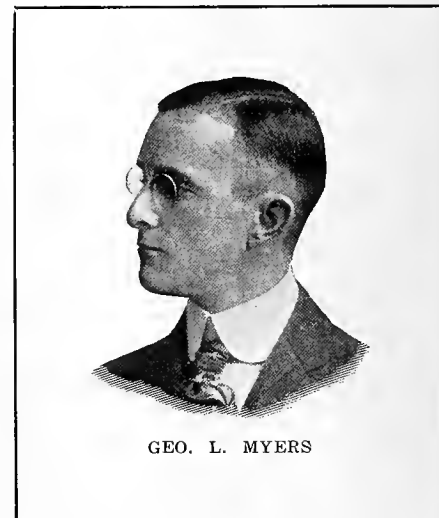
F. E. Johnson, Jr., vice-president and general sales manager of the M. W. Kellogg Co., New York, who was in San Francisco recently, is on his way to Japan in the interests of his company. From Japan he will continue to India and return to New York by way of the Suez Canal.

R. J. Davis, Pacific Coast representative of Century Electric Company, is taking a rest under doctor's orders, as it is expected that a rest of some weeks will be necessary to put him again in his usual state of good health.

George W. Craven has been appointed as president of the Montana State School of Mines. He succeeds C. H. Clapp, who has been chosen president of the state university at Missoula.

Clyde Chamblin, president of the California Association of Electrical Contractors and Dealers with headquarters in San Francisco, is in attendance at the Catalina Island gathering of the Southern District of the California Association of Electrical Contractors and Dealers. J. W. Redpath, secretary of the Association, is also in attendance, and in addition is visiting a number of the various sections of the Association in different parts of the state.

George L. Myers, assistant to the president of the Portland Gas & Coke, Pacific Power & Light, and Walla Walla Valley Railway companies, was re-elected vice-president of the Northwest Electric Light and Power Association for the state of Oregon at the Portland convention. Mr. Myers has been very active in bringing about the cooperation of the men in the electrical



GEO. L. MYERS

industries of the Northwest, especially in the bringing about of better business methods and establishing better public relationships. Previous to his association with the companies mentioned above he was with the Oregon-Washington Railroad and Navigation Company. In 1912 he became treasurer of the Pacific Power & Light Company and private secretary to the president of the three associated companies.

Curtis M. Lindsay has been appointed business manager of Journal of Electricity and Western Industry in addition to being secretary-treasurer of McGraw-Hill Company of California. H. W. L. Gardiner continues as vice-president of the California company but has resigned as business manager of the Journal in order to concentrate his activities on the local interests of the ten McGraw-Hill papers published in the East, for which he is Pacific Coast business manager. Mr. Gardiner will also exercise supervision over the Pacific Coast advertising of Journal of



CURTIS M. LINDSAY

Electricity and Western Industry. Mr. Lindsay has now been in the San Francisco office of the company for about six months, having been transferred here from New York. His former work with the Hotpoint Company and later with the Edison Electric Appliance Company, followed by his work in the eastern offices of McGraw-Hill Company, has pointed him out as a man of quiet business balance with a thorough familiarity with the details of the publishing business.

Guy Flenner of Boise has been named managing director of the Idaho Reclamation Association to succeed the late Major Fred Reed. Mr. Flenner will conduct an extensive educational campaign throughout the state for the next ninety days, the purpose being to collect the next year's budget.

George Armstrong, Pacific Coast editor of Electrical World, has been spending some time in visiting Salt Lake City, Butte, Montana, Spokane, Seattle, and is again in his San Francisco office.

S. M. Kennedy, vice-president in charge of public relations for Southern California Edison Company, is a recent San Francisco visitor. It will be interesting to note in passing that the well-known book of Mr. Kennedy's entitled "Winning the Public" has received such a rapid sale throughout the country that it is now soon to appear in the form of a second edition with two additional chapters covering interesting phases of development that have taken place since the book appeared a year ago.

Daniel H. Braymer, managing editor of Electrical World, together with his wife has returned East again after visiting Salt Lake City and San Francisco, passing on his way eastward through Yellowstone National Park.

Howard E. Sandoval, formerly in charge of range sales of the Alameda county district for the Pacific Gas & Electric Company, later in the Navy of the United States and more recently in private business at Modesto, has returned to the San Francisco Bay region to enter work in the electrical industry, announcement of which will be made later.

R. E. Smith, in the general office of the Southern California Edison Company at Los Angeles, has recently delivered a very interesting talk on the Einstein Theory before the Los Angeles Electric Club, the Advertising Club and the various Edison Company organizations. Mr. Smith hasn't quite been able to demonstrate the fact that the image seen in the telescope is really the man himself, as Mr. Einstein claims, but he gets pretty close to it in his deductions.

A. B. West, vice-president and general manager of the Southern Sierras Power Company and president of the Pacific Coast Division, N. E. L. A., is a recent San Francisco visitor, during which period he has been formulating many of his plans for Association activities for the coming year.

Ivar Herlitz, who holds one of the fellowships for the American Scandinavian Foundation in electrical engineering and has been located at Union College, Schenectady, N. Y., during the last year, is a recent Pacific Coast visitor, where he has spent some time in visiting at Los Angeles, San Francisco and Spokane points of interest in hydroelectric development.

George O. Muhlfield, vice-president and general manager of Stone & Webster Company with headquarters at Boston, Mass., is a recent Pacific Coast visitor where he has spent some time in visiting Seattle, San Francisco and Los Angeles centers of activity.

E. B. Bumsted, consulting engineer with headquarters at San Francisco, is in Los Angeles where he has spent several months in developing his activities for oil shale products, but expects to be back again in San Francisco shortly.

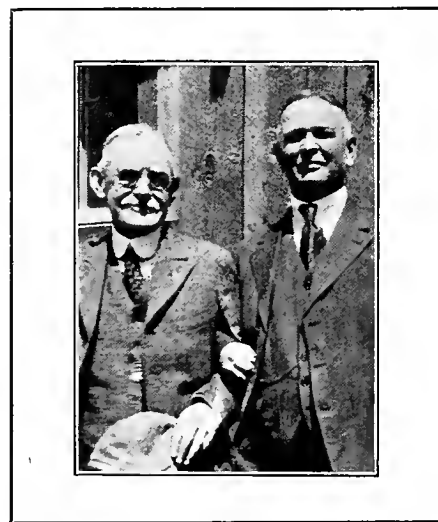
John H. Rosseter, formerly vice-president of W. R. Grace & Company, steamship operators, has severed his connection with the company to devote more of his time to the Pacific Mail Steamship Company, of which he is vice-president and general manager.

C. W. J. Coleman, M. J. Canny, G. H. Wion and H. Sergeant of the Victorian Railways and W. A. Clark of the New South Wales Railways have arrived in San Francisco to make an intensive study of the methods for the handling of materials and supplies in use by the Southern Pacific Company.

E. V. Vandercock, president of the Western Federation of the American Association of Engineers, was a recent Ogden visitor, en route from San Francisco to New York City. While in Ogden Mr. Vandercock conferred with President B. W. Matteson of the Ogden chapter of the American Association of Engineers and other officials. Mr. Vandercock was entertained with a trip to the Hermitage and other points in Ogden by Ogden engineers before departing for the East. At New York Mr. Vandercock will confer with national representatives on engineering problems.

S. L. Shuffleton, Pacific Coast manager of Stone & Webster Company with headquarters at San Francisco, is just completing the work of his company on the Caribou plant of the Great Western Power Company in the lining of the final tunnel taking the waters from Lake Almanor, and is transferring part of his force to the dam of the Snow Mountain Power Company on Eel River, in California, which construction work his company has recently taken over.

John D. McKee, vice-president and treasurer of the California Oregon Power Company, and John A. Britton, vice-president and general manager of the Pacific Gas and Electric Company, snapped by our special photographer as they completed the latest "interconnection" of these two companies by tenderly locking arms. It is certain that this latest "interconnection" is an



indication of the perfect synchronism that must exist between the various power companies if the industrial and commercial development of the West is to be brought about to the fullest extent. The best part about this interconnection is that it took place on the properties of the Great Western Power Company on the occasion of the opening of the Caribou power plant.

Obituary

Albert Taylor, manager North Atlantic district, The Edison Storage Battery Co., and well known in the electrical industry, died suddenly on July 6th in New York. Mr. Taylor was taken ill in his office, 23 West 43rd St., New York, and died a few hours later in the hospital. He was buried from his home in New Rochelle on July 8th.

S. H. Chatten, president and controlling owner of the Union Lumber Company, Union Mills, Wash., died of heart failure in Kansas City, on July 12. Mr. Chatten was 58 years old, and considered one of the country's leading lumber manufacturers. He was president of the Southern Lumber Company, operating at Myrtis, La., and one of the first southern operators to become active in West Coast lumber operations, having established himself in the western industry in 1906.

Business Outlook in Western Market Centers

Reflecting the Trend of Community Thought on Conditions and Events Affecting Business and Industrial Activities Throughout the West

SAN FRANCISCO

Transportation problems and the labor situation are topics of discussion by all classes of business men in San Francisco and the Bay District. The way to connect the city with Oakland by means of a tunnel, bridge and mole has been indicated, and the peninsula cities are agitating the electrification of the Southern Pacific lines as far as San Jose in order to bring about the development of this section. After almost two months of comparative inactivity there is considerable building throughout the city, although this has been resumed in a cautious manner, as building investors are looking for lower costs of material and labor. All building under way is conducted on the American plan. The labor unions affected by the building strike have attempted to enlist other unions in support of the closed shop, while there is considerable sentiment on the part of the employers in other trades to insist upon the American plan of operation. Not only is there a feeling that the American plan of operation will be the rule in San Francisco in the future, but also there is a conviction that if the city is to develop industrially closed shop conditions cannot be tolerated. As the result business men are putting up with conditions as they now exist and looking forward to the future with a feeling of optimism.

While business is depressed—partly as the result of the strike tie-up and increasing unemployment in other lines—there is a sound general undertone and a feeling that the worst has passed. Under present conditions no one is attempting to predict a definite date for the beginning of the upward trend of industry.

LOS ANGELES

Power is the vitalizing factor of Western industrial growth. None of the industrial cities of the West can hope to continue to develop unless ample provision is made for the future demands for power. During the past two weeks an avalanche of public opinion has descended upon Los Angeles as the result of the condemnation by the city of one of the power plants of the Southern Sierras Power Company. But the interesting thing in the trend of the public opinion, as expressed by the newspapers and by individuals, is that it is directed against the city rather than against the power companies. Public opinion is not favorable to the power companies in this instance, but has taken the form of protesting against the city of Los Angeles grabbing all the hydroelectric power sites from which power can be made available

throughout Southern California. Other cities than Los Angeles are looking forward to greater industrial growth and are considering the possibility of a power shortage with apprehension.

General conditions in and about Los Angeles are unchanged, building activity continues with but slight reduction in volume. The recent price reductions in automobiles has improved sales, indicating a reserve buying power on the part of the public; sales of the higher priced cars are particularly strong. Summer resorts, however, report trade below normal. The agricultural situation has improved, and very good crops are being obtained at harvest. Collections are fair and bank clearings ahead of last year. Labor is well employed.

SALT LAKE CITY

No material change has been experienced in general business conditions in the intermountain section during the past two weeks.

Farmers are beginning to harvest their crops, and this has created some demand for money, although a rather quiet period has prevailed in banking circles. Bankers report that while money rates have become slightly easier in the East no great change has been experienced locally as yet. There appears to be a general holding off of money for investment purposes.

Crop prospects in Utah and the surrounding states are reported to be the best in years, although farmers are somewhat concerned in regard to market and prices. With fair prices and good market it is expected that much liquidation will result, which will materially aid the banks. The prices and demand for market products are somewhat better, and there is a tendency on the part of farmers to sell their produce and get out of debt, rather than to hold on for better market prices.

Although there are at the present time a great many men looking for employment, the unemployment situation has been somewhat relieved by temporary work being provided to quite a number of men on farms.

The local retail trade reports business generally good. Local dry goods companies have been active with clearance sales. The lumber and hardware business is being stimulated by increased building activity. Home building activity in Salt Lake, as a matter of fact, will greatly eclipse that of last year. Reduced prices for material and labor are contributing largely to this favorable situation.

Mining conditions have shown little change during the past two weeks. Copper mining operations continue to be practically at a standstill. This, however is not the case with the silver-lead operators, and mining conditions

along that line are considered as fairly satisfactory. Some of the miners who were thrown out of employment because of the shutdown in the copper camps have secured employment in other mining camps where silver-lead properties are operating.

Trade in electrical appliances is rather slow. Dealers are continuing intensive sales work and advertising, but the buying public seems to be holding off to a considerable extent. Electrical contractors are securing quite a satisfactory share of business on account of increased building activities mentioned above.

Two large irrigation pumping projects, namely, the Bonneville irrigation project, just north of Salt Lake City, and the Provo Reservoir Company, about twenty miles south of Salt Lake City, have just completed their plants, and electric current has been turned on to operate their pumps. As a result of the operations of these companies, it is expected that many thousands of acres of land will be reclaimed and made to produce good crops. Several other smaller projects are in course of organization.

On the whole, business conditions are considered as satisfactory as could be expected, with considerable optimism as to the future.

PORTLAND

Although business is still far below normal there seems to be a general spirit of optimism and some feel that there will be a gradual improvement from now on, and it is generally conceded that early fall will see a marked improvement in nearly all lines. Retail trade in seasonal lines is good while in others it is quiet. Wholesale buying continues on a restricted basis to fill present wants only, with little tendency to lay in large stocks.

It is expected that the settlement of the marine engineers' strike will have a very stimulating effect upon shipping from this port, particularly in grain. The financial aid being given the railroads by the government, it is expected, will result in the placing of large orders for lumber with the mills of Oregon and Washington. This is hailed by lumbermen as a harbinger of better times in the lumber industry. Activity in residence construction continues and the decision to proceed with the construction of two new hospitals immediately adds impetus to building in the commercial line.

Electrical jobbers report practically no change in business conditions although the tendency is in the right direction. It is expected that recent price reductions in some lines will have a stimulating effect.

SEATTLE

While there is no marked development in general business that would justify undue optimism, still there is an underlying current of renewed confidence that is doing much to improve conditions. No one can point to a definite improvement, but there is a disposition to expect better things—a feeling that the “buyers’ strike” is breaking—and a tendency to discourage undue pessimism.

The recent failure of the Scandinavian-American Bank in Seattle caused a slight panic on the part of the public, with a consequent run on the Dexter-Horton National Bank, admittedly one of the strongest financial institutions in the Northwest. Such an occurrence coming at a time when the public confidence has been somewhat undermined by business depression might have caused serious results—but the public statement on the part of Dexter-Horton Company that their bank would open one hour earlier and remain open until 8 o'clock at night, in order that all depositors might be given prompt service, acted as an antidote to the rumors of financial difficulty, and served to immediately restore confidence.

Department stores are holding their mid-summer and July sales, and the volume of sales has been heavy during the past week. Genuine bargains are offered, indicating to the public that a return to something near normal prices may be expected. In fact, the public will not buy at this time unless it is made to feel that the price asked is decidedly lower than the “war” prices.

The passing of the most prolonged period of extreme depression ever known to West Coast lumber industry seems to be marked by prospective early buying of considerable volume. Lumbermen in this district believe that with a resumption of railroad purchases, a general improvement will be noted in the Fall, with a probable return to normal by Spring, providing further freight rate readjustments restore competitive conditions for West Coast lumber in eastern markets. Production for the past month has been only 46 per cent of normal, due to the heavy stocks on hand at the various West Coast plants.

The labor situation does not show a marked improvement in the Puget Sound district. Industry, as a whole, has shown little increased activity that would demand additional workers. The shut-down for the Fourth of July holidays, usual in this section in logging camps and mills throughout the entire district, was more extended than usual this year, but a majority of these camps have now reopened with a full crew. No difficulty is noted in obtaining competent help in all lines.

New building in Seattle is comparatively satisfactory, with something over a million and a half dollars' worth of work under way in June. A very fair amount of this is for new residence construction. Industrial building is not particularly active, although several projects of some magnitude have been undertaken.

Electrical jobbers report a slightly improved situation, with considerable

activity in line construction material. Home appliances have been moving fairly well, especially “hot-weather” equipment.

SPOKANE

For the time of year and in view of general conditions, business is good. Retail trade, while feeling the usual summer lull, is yet good and so are collections. Outside the city, this is not true, particularly with regard to collections, and necessarily will not be until after the harvest. This is in progress already in some sections of the Inland Empire. Reports from all districts give glowing accounts of the winter wheat crop which is practically made. Spring wheat with continued cool weather or a little rain will also yield an excellent crop.

Crop reports are the basis of an optimistic feeling. Bankers expect that the bumper crops in prospect will be the means of extensive liquidation this fall which will afford a foundation next spring for an excellent year. There are no large building operations in Spokane this year, the total value of building permits falling far below that of last year, but whereas last year there were few houses under construction, this year building is almost exclusively limited to residences. Many are being put up by the owners for homes and others are under construction by contractors for sale. Every section of the city has new homes under construction and the result is most noticeable in driving about the city. The home building movement, repressed during the war because of government necessities and since by excessive prices, has fairly started again. This has not yet started in the surrounding country towns, which all report house shortages, but with a good harvest this should begin next year and with the prospects in Spokane for a better building year than this, will probably take on the aspects of a real building boom with consequent shortage of carpenters.

The hope of the passage by Congress of a tariff on lead is causing a better feeling in the Coeur D'Alenes where most of the producing mines are shut down because of the low price of lead. The lumber business is still in the doldrums with demand light and prices weak, but lumbermen note building resumption locally and in various places throughout the country with satisfaction and make it the basis for hope for next year.

Books and Bulletins

Ejector Cutouts

Schweitzer & Conrad, Inc., of Chicago, Ill., have issued a pamphlet describing their Type E ejector cutout. The S. & C. ejector cutout has been developed to meet the demand for a reasonably priced but absolutely reliable transformer cutout for voltages up to 6600. Fuse elements for use in this cutout are made in various capacities ranging from 10 to 100 amperes.

Selling With Colored Lights

Considerable progress has recently been made in the development of equipment for colored lighting of display windows by the Ivanhoe-Regent Works of the General Electric Company. Two units of particular interest have been developed and are now receiving wide attention because of the increased use of color in window displays. These are the Iris equipment for display window lighting and the Iris spotlight used in connection with colored lighting displays for emphasizing the particular object on display. Two pamphlets that have recently been issued describe the Iris equipment and the use of this equipment for window display lighting.

Hydraulic Turbines

I. P. Morris Hydraulic Turbines are described and illustrated in a recent bulletin issued by the Wm. Cramp & Sons Ship & Engine Building Company of Philadelphia. The bulletin reviews the development of hydraulic turbines and briefly describes the notable improvements in hydraulic turbine machinery developed by this company. Of particular interest is the following statement quoted from the introduction: “The vertical-shaft multiple-runner type of turbine has become practically obsolete, and the horizontal shaft type which totaled nearly 25 per cent of the installations made by this company in the years 1910 to 1915 represents only 6 per cent of our installations in the years 1915 to 1920. As an indication of the continued trend toward increased capacities, it is interesting to note that the average unit horsepower of turbines manufactured between 1910 and 1915 amounted to 9,500 horsepower. From 1915 to 1920 this was increased to an average unit capacity of 13,200 horsepower.

“For the year 1920, the unit capacity of turbines under construction by this company averaged 17,000 horsepower.”

Some of the larger turbine installations manufactured by this company are as follows:

The 37,500 horsepower turbines built for the Niagara Falls Power Company; the 55,000 horsepower turbines under construction for the Hydro-Electric Power Commission of Ontario; the 30,000 horsepower turbine for the Southern California Edison Company; the 30,000 horsepower turbine for the Muscle Shoals Development of the War Department, and also the 41,000 horsepower turbine for the Shawinigan Water & Power Company, under construction by the Dominion Engineering Works, Ltd.

The improvements developed by this company have made it possible to guarantee efficiency in excess of 90 per cent over a range of from 50 per cent to full load capacity.

The General Electric Company has recently perfected a new form of sheath wire for electric heating applications. The new unit is known as the Helical coil sheath wire unit, being a decided improvement over the drawn sheath wire unit which the company has manufactured for several years, being stronger and lending itself to a wider range of industrial heating applications. The units are made in different sizes and of several capacities and of alloys adapting them to various uses.

Construction News and Industrial Developments

Suggesting to the Engineer, Contractor, Manufacturer, Dealer, Agent and
All Business Men Opportunities for New Business

THE PACIFIC NORTHWEST

OREGON CITY, ORE.—The contract for building a new bridge across the Willamette River between Oregon City and West Lynn has been awarded to A. Guthrie & Co. on a bid of \$215,602.

PORT ANGELES, WASH.—The plant of the Puget Sound Mills & Timber Company has closed down for repairs and renewal of equipment. The plant will be completely electrified and resume operations about September 1st.

TACOMA, WASH.—The National Cocomat Oil Company of Tacoma is now operating at the former plant of the Columbia Brewing Company and has remodeled the structure to accommodate the new line of business. Production will be devoted to laundry soaps, washing powders, etc.

TACOMA, WASH.—The Buffelin Lumber & Manufacturing Company is rushing work on an extensive building program, which includes an expenditure of approximately \$360,000. Included in the program is a power house costing \$150,000; a veneer factory costing \$160,000, and a planing mill costing \$50,000.

RAYMOND, WASH.—The steamer Munaires of the Munson Steamship Company's fleet arrived in port last week and loaded 5,500,000 shingles, representing the output of all the lumber mills in this district. She later sailed for Everett and Tacoma, where she will complete her cargo. This is the first time that any of the Munson Line's fleet has ever put into this port.

VANCOUVER, WASH.—The Koster Products Co. of Vancouver is to build a furniture factory which will employ between 3,000 and 5,000 men, according to a recent report. The company is at present operating a small furniture factory and plans to erect the new plant on a 150-acre site adjoining the Standifer Shipyards. The new plant is necessary to take care of the company's rapidly increasing business of manufacturing high grade furniture in large quantities.

VANCOUVER, WASH.—According to a preliminary report issued by the Dominion bureau of statistics and the department of fisheries on the valuation of Canada's fish catch for 1920, the chief commercial fish were: Salmon, \$15,595,970; lobsters, \$7,162,475; cod, \$8,270,171; halibut, \$4,583,188; herring, \$3,337,738; whitefish, \$1,992,197; haddock, \$1,522,680; mackerel, \$1,126,703; trout, \$858,942; sardines, \$860,268; smelts, \$789,361; pickerel, \$682,277, and pulchards, \$340,265.

SALEM, ORE.—The expenditure of \$3,000,000 in new power development is contemplated by the Portland Railway, Light & Power Co. as disclosed by an application for water right filed with the state engineer recently. The application involves the storage of 100,000 acre-feet of water in Big Bottom reservoir on the Clackamas River and the diversion of 600 second-feet of water through a tunnel from the Clackamas River to Oak Grove Creek for the development of 58,600 horsepower.

SALEM, ORE.—The development of 58,600 horsepower, proposed in an application filed with the state engineer by the Portland Railway Light & Power Company, for the appropriation of 100,000 acre-feet of water from the Clackamas River. It is proposed to convey the water

by means of canals and tunnels a distance of several miles and develop approximately 58,000 hp., under a head of 860 feet. The estimated cost of the project is \$2,000,000. Although no immediate construction work is contemplated, work will probably be begun within a year.

THE PACIFIC CENTRAL DISTRICT

TRACY, CAL.—The city is planning to construct and operate a municipal gas plant.

MADERA, CAL.—The city trustees have ordered the installation of a pump and electric motor for the water system of the Hughes addition.

MODESTO, CAL.—Contract for the construction of a telephone exchange building, estimated cost \$45,000, has been awarded to Monson Bros. of San Francisco.

OAKLAND, CAL.—Construction will soon be started on a \$100,000 building for the Oakland Title Insurance & Guarantee Company. The building will be located at 15th & Franklin streets.

SAN FRANCISCO, CAL.—The Taiwan Electric Company, operating in the island of Formosa, is calling for bids for the equipment necessary for a hydroelectric project of approximately 150,000 hp.

RICHMOND, CAL.—The city is planning the expenditure of \$35,080 for an electrically operated pump, additional pipe and other necessary expenses to provide the city with an adequate water supply.

SANTA ROSA, CAL.—The California Telephone & Light Company is rapidly completing a new power line into the Trenton section, and as a result many residents in that section are enjoying the benefits of electric service.

TURLOCK, CAL.—The city council has granted the Tidewater & Southern Railway, a subsidiary of the Western Pacific Railway, a 49-year franchise to operate a commercial railroad by steam, electricity or otherwise through the city.

CHICO, CAL.—The city trustees are planning a municipal water supply and have secured figures from the Chico Water Supply Co., which has offered to sell its holdings. City Engineer F. S. Robinson has been instructed to prepare estimates of cost for the complete system.

VALLEJO, CAL.—Estimates of the cost of the proposed municipal water supply project of this city have been submitted to the council by engineer L. Thompson. Estimates of the cost of construction of septic tanks at Wild Horse Valley and Fleming Hill have also been submitted.

SAN FRANCISCO, CAL.—Bids are being received by Charles T. Phillips, Pacific Building, for the construction of a reinforced concrete power house and also for general equipment for the same building, including a 150-hp. oil engine. Total estimated cost of project is \$100,000.

TRACY, CAL.—The Board of Directors of the West Side Irrigation District have appointed a committee to investigate the possibility and advisability of cooperating with the Modesto and Turlock Irrigation Districts or other irrigation districts using power. In order to cheapen the cost of this power and more adequately supply the districts.

EUREKA, CAL.—It is announced that a new company will be organized to utilize the refuse from the gas plants of the Western States Gas & Electric Co. It is proposed to compound the tar and coke produced in the gas plant and to sell this product locally under the trade name of "Synthetic Coal."

UKIAH, CAL.—Work will be resumed on the Eel River dam of the Snow Mountain Power Company by the contracting firm of Stone & Webster Co. Work on this project was discontinued the first half of July when a San Francisco contractor announced he would no longer work on the project.

GRASS VALLEY, CAL.—An election for the formation of an irrigation district and the election of officers will be held here August 4th. Construction of a diversion dam, conduit and distributing system, estimated to cost \$4,000,000, is planned. S. H. Tibbetts of San Francisco is engineer for the district.

SAN JOSE, CAL.—Through the sale of about 8,000 acres of marsh land by the Spring Valley Water Co. to the Continental Salt & Chemical Co. the fact is disclosed that the latter concern is to considerably expand its present manufacturing equipment. The land is to be used for the purpose of collecting and manufacturing salt and a number of by-products.

IRVINGTON, CAL.—Reed Bros., Inc., of San Francisco, manufacturers of hospital supplies of all kinds, including surgical instruments, rubber goods, and furniture, have announced that they will build a manufacturing plant here. The first unit will be a concrete building, of class A order, to cost approximately \$100,000. This will be followed by additional buildings.

MARTINEZ, CAL.—G. B. Putman of Walnut Creek has been named Contra Costa county representative of the Stewart Fruit Co., and is making preparations for the opening of several packing houses in the central part of the county. Arrangements have been made for a packing house at Walnut Creek and it is planned to open packing houses at Alamo, Lafayette, Hookston, and Muir.

NEVADA CITY, CAL.—The Excelsior Water & Power Company has established an engineering camp at Bowman Lake and has a large crew engaged in surveying the big water and power project it has undertaken. The company, a subsidiary of the Ayer interests, plans an immense hydroelectric development in this region and also the distribution of water to a large area of agricultural land.

OROVILLE, CAL.—According to an announcement made by O. C. Griffith of the Hutchinson Lumber Company, decision has been reached to start construction of the company's sawmill and box factory September 1st. The sawmill will have a daily capacity of 400,000 board feet and will be one of the largest in the West. It is proposed to have the plant completed and ready for operation by April 1, 1922.

YREKA, CAL.—Organization of the Klamath-Shasta Irrigation District, to include 125,000 acres in the Shasta Valley, was voted by an overwhelming majority at a recent election. The next step will be the organization of the district and the raising of the money with which to make a detailed survey of the project, which calls for the tapping of the Klamath river and using the overflow waters from Klamath Lake for irrigation purposes.

THE PACIFIC SOUTHWEST

SANGER, CAL.—A new theater building is to be built here. Plans are being prepared by W. H. Tully of Fowler.

FRESNO, CAL.—A new branch post office to handle city distribution, to cost \$35,000, will be built here. Construction is to start in August.

COLTON, CAL.—The Colton Fruit Exchange will equip its entire plant with power operated conveyors and in addition will make other improvements.

SEAL BEACH, CAL.—The California Willite Construction Co. will establish a plant here for the manufacture of road pavement and has purchased a site on Electric Avenue.

HOLBROOK, ARIZ.—Contracts have been let for the improving of the Alamogordo Electric Light Plant, and the city will soon have one of the best plants of this kind in the state.

LONG BEACH, CAL.—The Golden State Woolen Mills, Inc., has announced their intention to rebuild their plant which was destroyed by fire in April. The new building will cost \$650,000.

LOS ANGELES, CAL.—The Southern California Gas Co. has purchased the lease on the seven-story Goodrich Building at 946 South Broadway. \$50,000 will be expended for remodeling and improving the building.

SANTA ANA, CAL.—A new pumping plant and complete new machinery, as well as the construction of a new reservoir and pipe line, are contemplated by the Newport Heights Irrigation District. A \$160,000 bond sale has been announced.

SAN DIEGO, CAL.—The California Gypsum Corporation is planning to build a narrow gauge railway line from the plant at Coyote Wells on the San Diego-Arizona Railway to the gypsum deposit 15 miles north. An additional plant in San Diego is contemplated.

BIG BEAR VALLEY, CAL.—The Bear Valley Utility Co., recently incorporated, proposes to supply the Big Bear Valley with electric energy. Power lines and distribution system are to be built. Power is to be purchased from the Southern Sierras Power Company.

BEAUMONT, CAL.—The directors of the Beaumont Irrigation District have decided to start at once on the construction of a pipe line in Wallace Canyon. Approximately 2,000 feet of pipe will be installed as a means of conserving the flow of water in the canyon.

SANTA BARBARA, CAL.—The Ord Ice Co. is preparing plans for doubling the present capacity of its plant, located at the corner of Canon Perdido and De Lavina Street. An additional ice machine will be installed and the improvements will cost approximately \$50,000.

LOS ANGELES, CAL.—The Pruden-Burr Unitsteel Construction Co., a subsidiary of the Metal Shelter Co. of St. Paul, plans to manufacture portable and collapsible steel buildings of all sizes and dimensions. Temporary offices are being maintained in the Douglas Building.

LOS ANGELES, CAL.—The Los Angeles Street Railway will spend about \$500,000 in carrying out extensions to its present power equipment, according to George J. Kuhrt of the Street Railway Department. The sum of money will be expended to erect automatic substations of sufficient capacity to meet the demands of the local transit system for several years.

LOS ANGELES, CAL.—Plans have been completed by the Southern California Telephone Co. for the addition of four floors to the Hill Street office building and one floor to the Olive Street building. The four floors added to the Hill Street building will be used for extra office space and the extra floor added to the Olive Street building will be utilized as a cafeteria for the employees.

PHOENIX, ARIZ.—It is proposed to build an electric power line from the plant of the Salt River Valley Water Users' Association to the Casa Grande Valley, estimated to cost \$110,000.

LOS ANGELES, CAL.—The Southern California Edison Company has applied to the Railroad Commission for authority to issue and sell \$6,000,000 of its general and refunding 6 per cent, 25-year, gold bonds. The proceeds are to be used to finance the cost of extension and to liquidate indebtedness incurred the past year for its hydroelectric development on Kern River and on Big Creek.

THE INTERMOUNTAIN DISTRICT

AULT, COLO.—The city has voted to sell the distribution system of the municipal electric light plant to the Home Gas & Electric Company of Greeley, Colorado.

WINNEMUCCA, NEV.—The power plant of the Winnemucca Water & Light Company was entirely destroyed by fire recently. The estimated loss is between \$60,000 and \$70,000. The entire equipment will have to be replaced.

RENO, NEV.—The board of directors of the department of state highways announces that agreements have been made with the Federal Government whereby \$1,866,000 will be expended by the government on highway work in Nevada.

ALAMOSA, COLO.—A hydroelectric plant at the falls on Butte Creek, on the south slope of Mt. Blanca, which will supply power and light to a large section of the San Luis Valley, is proposed by Denver men, whose representatives were here recently to investigate the proposition.

LEVAN, UTAH.—The town board has signed a contract with the Big Springs Electric Company of Fountain, Utah, to furnish electric power. Before long work will commence on the system and some time during the autumn the town will have an up-to-date lighting system and power with which to operate different industries.

MOAB, UTAH.—Work has begun on the installation of the new lighting system on Main Street. A line strung from iron poles will be run on each side of the street. Since the old poles were removed from the center of the street and the thoroughfare graded and surfaced, several months ago, the street had been in darkness.

EUREKA, UTAH.—A connection has just been made which will make possible the use of electric power at the new East Tintic shaft of the Chief Consolidated mine. This shaft, which will be three-compartment in size, has been equipped with modern hoisting machinery, and extensive development work, at a rapid rate, is planned for the near future.

MILES CITY, MONT.—Cordial endorsement of the project for furnishing power and irrigation for the Yellowstone Valley from Forsyth to Glendive, Mont., through the installation of a hydroelectric plant at Buffalo Rapids was given at Miles City, Mont., recently by E. F. Benson, colonization agent of the Northern Pacific. He said: "This project is modern and its value to the state and all its interests cannot be calculated in mere dollars. I sincerely hope it will go through."

PARK CITY, UTAH.—The steel for the new mill of the Silver King Coalition mine is now commencing to arrive. Sixty men are employed in cement work, carpentering, grading, excavating, etc., and construction work on the mill proper will be commenced in the near future. Reports from the mine are of the most encouraging nature. Development work opening up ore reserves in new territory assures a bright future for the Silver King Coalition. About 300 men are now on the payroll.

IDAHO FALLS, IDA.—The brick plant on the west side of the river and north of the city about a mile, has resumed operations after having been shut down for a considerable period. The owners of the plant state that there is little call for brick at the present time, but that they expect some building operations will soon be resumed, and that then the market will be opened. It is the purpose of the plant to make a sufficient supply of common brick so that it will not be necessary to ship any of that grade here.

POCATELLO, IDA.—It is understood that crews will be started to work at once on the Boise-Mountainhome irrigation project in the vicinity of King Hill. A topographical survey, financed by the federal government and the Boise Commercial Club, will be made to determine the feasibility of putting water on the arid land described in the project. The twenty-five mile stretch from Milner, in the King Hill region, will, in a large way, determine the expediency of going on with the construction. In this area decomposed ground, gullies, lava and other hindrances to engineering will be encountered.

BOISE, IDA.—Notice by the federal government that the Dead Ox Flat irrigation district had filed June 6, 1912, for a power site on the south fork of the Payette river at the point where the city of Boise has under consideration a power plant, was contained in a letter read by the city attorney of Boise at a recent meeting of the city council. It was brought out in the letter that the irrigation company's right was still in force, and that some agreement might be reached with the district by the city if the erection of a power plant were decided upon. The communication explained that the company could only use a portion of the power developed. The matter has been taken under advisement.

SALT LAKE CITY, UTAH.—Moses M. Dahle, of Salt Lake City, has filed application with the state engineer of Utah for the storage of 10,000 acre-feet on the Little Bear river, in Cache county, to be used as a supplementary supply of water in irrigating 9440 acres of land. The reservoir is to be constructed by a dam 600 feet long and sixty feet high, a few miles upstream from Wellsville, according to the application, storing the waters of the Little Bear river from October of each year to July of the following year. Stored waters would be released during irrigation season and allowed to flow downstream to a point in the vicinity of Newton, where the water would be taken out by a pumping plant for a supplemental supply on the lands covered by the application.

BUHL, IDA.—A new milling company has been organized in Buhl, to be known as the Buhl Flour Mills, Ltd. The stockholders of the new organization have elected the following officers: Ralph Rendla, president; J. J. Rugg, vice-president; Claud Brown, secretary; A. H. Dixon, treasurer and general manager; P. F. Ahlquist, director. The company is organized with a capital of \$100,000, of which \$27,000 is paid up, and has bought lots near the railroad, next to the canning factory, and has begun excavating for a new building and water mains. Manager Dixon states that the building will be thirty-two feet by forty-two feet, and four stories high. The machinery has been ordered and will be shipped when the building is ready to house it. Electric power will be used, and a steam plant will also be installed for heating and steam-rolling barley. Eighty barrels a day will be the initial capacity. However, the plans call for an arrangement whereby units may be added to bring the capacity up to 200 barrels a day. The company estimates that it will take from sixty to ninety days to install the machinery after it arrives. An effort will be made to push the work so that some of this year's crop can be handled.



THINGS WHICH NEED INVENTING

A straw hat of boomerang shape, that will come back when it blows off.

A pocket instrument for opening railroad car windows.

A neighbor's chicken which does not come into your garden.

A non-skid plate for things served on toast.

A square nickel that will not roll off the street car.

* * *

INTERPRETIVE DANCING

I saw a barefoot lady dip,
And kneel and rise and poise and hover,
As if to pin a pillow slip
Upon the line stretched high above her.
"This must be comedy," I said,
"Some esoteric highbrow joshing.
This nymph who moves with classic tread
Is hanging out the family washing."

The program told me I was wrong—
The dance was labeled "Slumber Song."

I saw a maid with flying feet,
Whose clothes were singularly airy,
Go running through a field of wheat,
With all the fleetness of a fairy.
When I had gazed awhile askance
At her abbreviated habit,
I thought "The title of this dance
Is 'Girl in Nighty Chasing Rabbit.'"

My guess was wrong—the program said:
"A Russian Peasant's Prayer for Bread."

Six damsels, very sparsely clad
In white diaphanous confections,
Came tearing in and ran like mad
In many different directions.
"Aha!" I cried, "I think I get
The meaning of this scene before us;
The title of it, I will bet,
Is 'Mouse Stampedes a Ziegfeld Chorus.'"

But my conjecture went astray—
The dance was "Woodland Birds in May."

(Borrowed.)

* * *

WASTED MOMENTS

Reading the weather forecast.

Getting information from windows labeled "Information."

Listening to speeches that begin, "We are about to enter upon a new era."

Deciphering a business man's signature when it is printed at the top of the letterhead.

Hunting for news in an "Extra."

Figuring out where the street car will stop.

* * *

Long distance transmission is a wonderful science. We notice an item in a Nevada paper stating that as part of a super-power plan it is proposed to construct a transmission line between Portland, Ore., and Baltimore, Md. Evidently the news of two super-power surveys, one in the Northwest and one on the Atlantic seaboard, has been too much for the reporter, and he has been unable to resist the temptation of tying them in.

HIGH FINANCE

A man came into an electrical store with an electric iron needing a slight repair. He waited until the job was finished, and being told it would cost a dollar, handed the dealer a five-dollar bill. The dealer was unable to make change so the customer said:

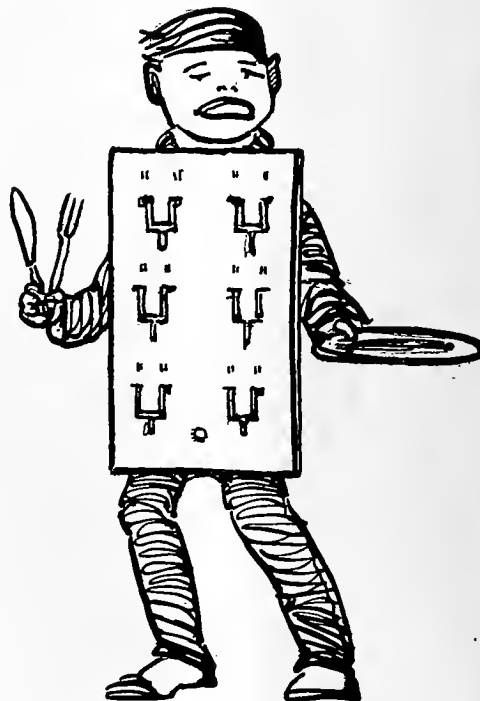
"I must take the iron back with me and I haven't another cent in my pocket. Let me have a dollar and I'll come back for the bill tomorrow."

The dealer consented, took the five-dollar bill, and handed the customer a dollar and the iron.

The following day the man returned, gave the dealer four dollars and took his five-dollar bill. Was this a profitable transaction for the dealer?

* * *

ELECTRICAL HYBRIDS



VIII—The Electric Switchboarder

The switchboarder's usually found with a knife,
He never was late for a meal in his life;
But though most monotonous fare will appease him
When feeding him currents 'tis risky to tease him.

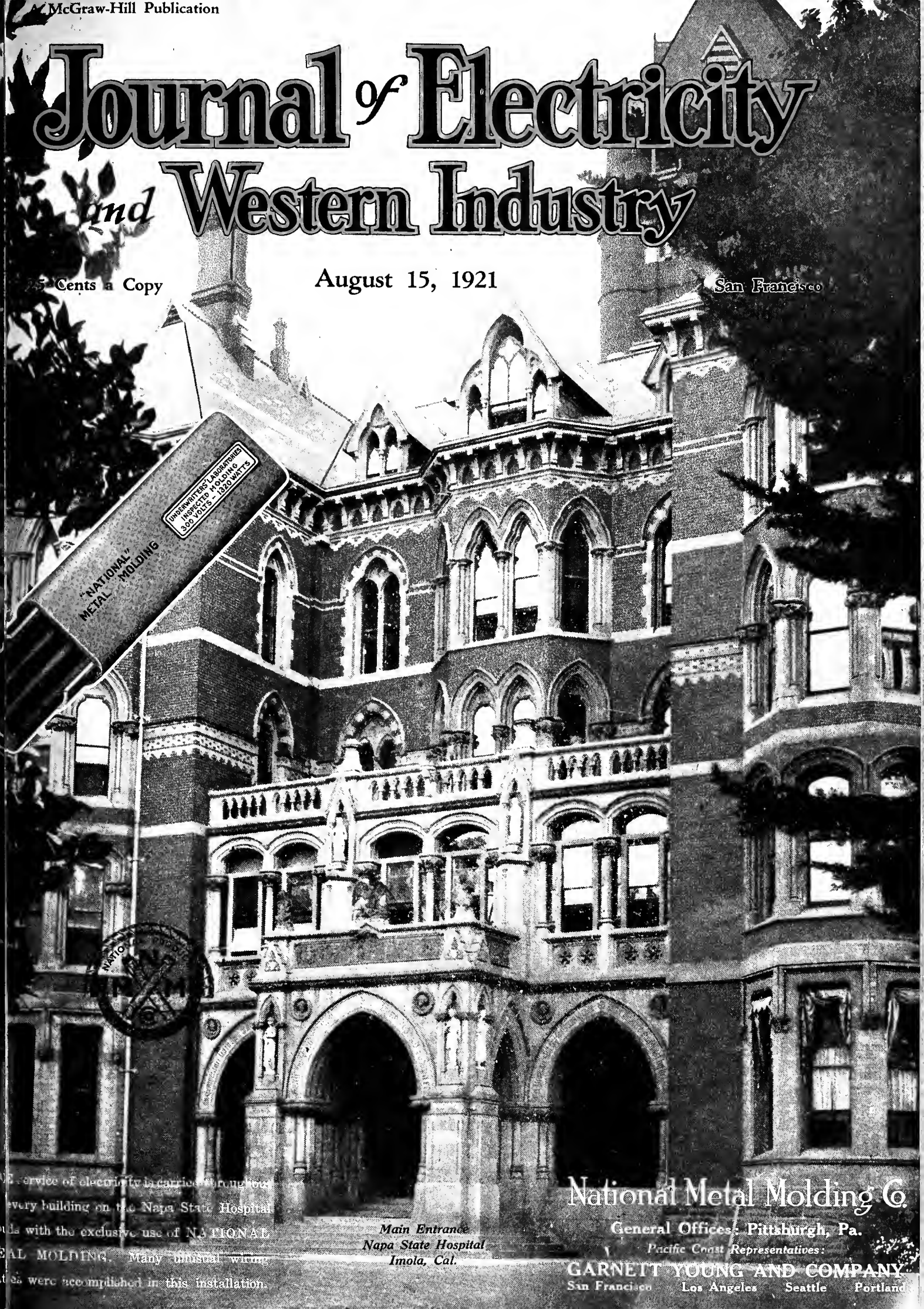
His face seems expressionless, yet you should know
That he is the chap who makes everything go;
And if when you want him you use the right handle,
You won't need to light up your place with a candle.

Journal of Electricity and Western Industry

25 Cents a Copy

August 15, 1921

San Francisco



Service of electricity is carried through out every building on the Napa State Hospital with the exclusive use of NATIONAL METAL MOLDING. Many unusual wiring jobs were accomplished in this installation.

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National Metal Molding Co.

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San Francisco Los Angeles Seattle Portland



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ROBERT SIBLEY, Editor

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SAN FRANCISCO, AUGUST 15, 1921

NUMBER 4

Journal of Electricity and Western Industry

A semi-monthly chronicle of western events, advocating the economy, efficiency and convenience of electric power for all industries of the West—manufacturing, agricultural, mining, merchandising, home building and home making. Interpreting the value of electrical development to the business and financial man, the industrial man, the power man, wholesaler and retailer, contractor and constructor, engineer and home owner.

Because of the abundance of water power in the West susceptible of economical development, a dependable, uninterrupted supply of cheaper electric power is assured for these industries. The basic industry of the West—hydro-electric power generation—for which Journal of Electricity and Western Industry is the spokesman, is therefore logically and inseparably linked to the growth and prosperity of all phases of our daily life and business.

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WHERE ELECTRICITY SERVES THE FOOD INDUSTRY

The entire prune supply of the United States, one-fifth of the world's citrus fruits, 95 per cent of the raisins and practically all the dried apricots, canned asparagus and canned salmon are produced in that part of North America lying West of the Rocky Mountains. Through improved illumination, better operating conditions and increased production made possible through motor drive, electricity is thus aiding in the packing houses and canneries of the West to prepare the larger part of the preserved food used on the world's dinner table. With the possible exception of the varied field of metal trades, the canning and packing of food products consumes more electricity than any other industry of this region.

Journal of Electricity and Western Industry

A publication devoted to the upbuilding of the great industrial West and the countries bordering on the Pacific

A McGraw-Hill Publication

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Interpreting Western progress through the application of electric power, light, and heat in industry and in the home

Vol. 47, No. 4

SAN FRANCISCO, AUGUST 15, 1921

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The Passing of the Closed Shop in the West

A certain renewed hope and enthusiasm have come to those who have been thoughtful onlookers in the labor difficulties that have been under way in the West during the last ninety days, particularly in reference to the so-called "builders' strike" which has taken place in San Francisco.

The entire situation is symptomatic of the general labor conditions. With the rise in the cost of living, wages increased, maintaining a proper and very steady relation to food, rent and clothing prices. As these costs go down, it is only natural that there should be an inevitable drop in wages.

In the San Francisco situation, labor made the claim that the arbitration board was chosen to decide between the maintenance of former wages or a wage increase which was under dispute. The contention of the employers and the weight of public opinion was to the effect that an arbitration board's decision was final and its repudiation by labor was a breach of good faith. At any rate, the board used greater wisdom than those who selected it and reported in favor of a wage reduction on the basis of lower living costs. It seems probable at the present time that not only this reduced wage will be accepted as the basis for settlement, but that the American Plan will be adopted for the building trades throughout the San Francisco Bay region. The American Plan does not aim at the abolishment of the union, but insists that to limit employment to union

members is an unAmerican restriction. The safeguard of a published scale of wages is provided but questions of opportunity of employment are to be settled between the employer and employees of each individual plant.

It is now generally recognized that the rejection of the arbitration board's decision was brought about, not by the rank and file of intelligent American manhood that is to be found in the membership of union labor, but rather by the domination of certain individuals who are responsible for such discredit as pertains to the situation. Organized labor should be given every opportunity to fulfill its mission of helpfulness, for there is a great service it can perform toward the upbuilding of the West. But there must not and there cannot be allowed any action which will bring about injustice to citizenry generally through the action of any one class.

Although it is now generally recognized that the closed shop has passed in the West, let not this lead to injustice on the part of employers and let them not vaunt themselves that now is an opportunity to apply the hand of an iron master. Citizens generally will not tolerate the institution of any practices between labor and employer that will not give to every citizen involved the open chance of employment, the opportunity to serve society and the freedom to go and do as any law abiding citizen may wish. The West is to be congratulated upon the trend of events in San Francisco and other Pacific Coast cities.

Plans for Discussion of Western Agent Problems

WEIGHTY problems have arisen from time to time in the agent-jobber-manufacturing field of the West that call for the thoughtful consideration of all those engaged in these lines of activity. The appearance in the columns of the Journal of Electricity and Western Industry, issue of June 15, of an extensive list of Western Representatives, has stimulated such widespread discussion and interest in the problems that the Journal of Electricity and Western Industry is initiating plans for an early informal gathering of these representatives to talk over certain of the outstanding problems in the trade, and to consider the desirability of calling together informal organizations in San Francisco, Los Angeles, Portland and Seattle to discuss problems of this nature from time to time, or, possibly, the organizing of an inclusive coast-wide movement.

At any rate, so much interest has been manifested in the idea that it would seem that an informal luncheon should be called at an early date, and to this end letters are being sent out to a number of those interested to determine the consensus of opinion in the matter. Readers of the Journal of

Electricity and Western Industry will be advised at a later date concerning the outcome. Meanwhile, problems of credit, transportation rates and distribution costs, as well as a number of other related discussions are of such a pressing nature that a start should be made at an early date with a view to getting together all those involved.

Electric Range Sales Get Under Way

FOR some time past there has been a feeling that in coming months the sales of the electric range and the electric water heater would experience an unusual activity due to the fact that uses of electricity are yearly becoming more widely extended in the home and also that, with the major power development program now well under way in the West, the electrical idea is being more generally sold to the people. In the issue of the Journal of Electricity and Western Industry for August 1st, 1921, there was set forth the details of a campaign that has been initiated by the Great Western Power Company of Central California, which should have far-reaching effects throughout the West.

Frequent attention has been called in these pages to the fact that certain features of electric range merchandising would seem to be central station problems for years to come. The servicing and upkeep of the ranges and the financing of extensive electric range sales are matters with which the central station seems best able to grapple at the present time. A tentative plan by which some of this work might be carried on through the channels of the electrical dealer has been worked out in southern California, but has not yet been put into practice. This is a system by which the manufacturer, jobber and other interests volunteer to finance the initial publicity work necessary to put a range campaign into swing, the dealer providing display space and putting back a certain share of his first profits into further promotional work. Exact details of this plan have not yet been worked out, however, and its success has not yet been tested.

In any case, there is an opportunity for the contractor-dealer to come in on the sales in handling the wiring installations which must follow with the sale of each range. In the instance just mentioned, the contractor-dealer is able to figure in the wiring at the cost to the central station and thus save the customer the extra charges that would be involved, at the same time profiting to a certain extent on the liberal financing allowed by the central station.

There is considerable activity noticeable in many districts of the West relative to the electric range and the early institution of sales campaigns. This recent venture put forth in California will, as a consequence, be followed with great interest throughout the West. The step is one which opens up numerous business getting opportunities and a resultant feeling of optimism is at once observable by those who are watching this renewed activity.

The Need for an Engineering and Industry Building

WHEN visiting any one of the great metropolitan centers of the West—Seattle, Portland, Spokane, Salt Lake, Los Angeles, San Francisco—one is impressed with the fact that there are in these cities great structures devoted to commercial enterprises, erected as monuments to the progressive spirit of insurance, banking and other specific lines of business in the district. But where are the monuments befitting the enthusiasm, daring and enterprise which have gone into the building of the engineering and industrial achievements of the West? The time has now come when men of engineering and industry should give thoughtful consideration to the building (in each one of these cities) of a monument to engineering and industry.

By modest beginnings great enterprises become future successes. Why should not each engineering organization or group of engineering organizations, and such allied industrial organizations as may exist in the various communities, begin to set aside, from time to time, even in a very modest way, sums of money as a building fund that may make possible the great structure at a later date?

As a matter of fact, well known capitalists have already offered sufficient funds to erect these buildings but it would seem better that such an enterprise should be owned and operated in a truly democratic manner. The actual participation in its ownership by the members of engineering clubs and industrial organizations in the communities would make it the kind and type of building desired. With club rooms and headquarters located on the top floors and offices maintained by technical and business organizations, civic centers for the engineering and industrial life of the communities could be built up to form a lasting monument to western industry.

The Absurdities Involved in Fixing Prices by Jury

A RECENT condemnation suit resulted in fixing the price of important water rights associated with a power development enterprise in one of our western states. The sales price, as is usual in such proceedings, was fixed by jury following the hearing of testimony from both interested parties. And, as is unfortunately also usual in such cases, the price ultimately fixed was arrived at by splitting the difference between the figures offered by either side. Now, the actual value of these rights may have been more or less than the distance between Omaha and Chicago—but there is about as much reason why it should bear any relation to that figure as there is why it should be the average between any two figures at all.

The full absurdity of this method of price fixing is seen in such cases as that of a land condemnation suit some time ago, in which the city involved offered something like \$15 per acre for unimproved land, a figure corroborated by real estate experts. The owners claimed a value of \$500 per acre, on the ground, apparently, that they could. With even-handed justice, the jury split the difference, allowing \$245 per acre, for land which when cultivated, at that time was selling for not more than \$30. The danger is apparent. The lower figure cannot go below zero—the upper is restrained only by the limits of the imagination. If the jury may be counted upon to average everything offered, it is an inducement to the owner at least to double the sum he thinks adequate—to the purchaser to offer nothing at all. Allowing for the possibility of a little less conscience on the part of the owner, it is conceivable that he may not stop at the double mark.

Both land and water rights have values which it is possible for experts to ascertain by other methods than guesswork—and there is no excuse for the present confusion in these matters. Why should a jury be asked to decide on prices at all? Would not the more equitable proceeding place the question of whether the property was to be taken over or not in the hands of the jury, leaving the matter of prices to be settled by a board of neutral experts in the particular field, these experts to be chosen by the court? No possible injustice under this method could equal those perpetrated under the present system.

Importance of Foreign Markets For Western Products

UNLIKE many of the thickly settled manufacturing centers of the country, the export business of the West far outdistances its imports. It is one of the great producers of raw materials. From a food standpoint, it feeds itself, with a tremendous surplus which must find consumption in other markets. This is also true of lumber production, in some fields of mineral production and in other specialized lines. The moving picture industry of the world, for instance, may be said to have its center upon the Pacific Coast.

The eastern and middle western sections of the United States, of course, form the major market for these products, but that this market is insufficient to absorb all that the West can produce has been

clearly shown during the past few months of depression during which export trade very largely ceased.

The analysis of the present trade situation and the outlook for the future written by a member of the oldest shipping house on the Pacific Coast, which appears on another page of this issue, clearly points out the possibilities in this field as they appeared at the darkest moment of the trade depression. Since that time the outlook has brightened along all lines and business is active, although at prices considerably lower than those to which western fruit men have been accustomed.

Much of the future of the West, both from an agricultural and industrial standpoint, depends upon the development of its foreign trade—and all problems which affect this field are of vital interest to business men in every branch of industry.

The New Editorial Vision for the Industrial West

INDUSTRY in the West may be defined as the assembling of raw materials, the fabrication of these into a marketable product, and the distribution and sale of the finished articles; and industry must perform a distinct service and be conducted at a profit. As a consequence, all educational effort in the West, particularly editorial effort, must be focussed to aid industry in the solution of its problems. The trade and technical papers must be the medium through which pertinent information that is essential to industrial development is collected. It must do more than collect information; it must become a leader in the development of industry generally through the dissemination of the best thought on industrial matters. It must interpret the outstanding features of engineering, economic, political and social tendencies that effect industrial growth, and to the close student of affairs in the West it must bring the firm conviction that the development of hydroelectric energy is basic. To this end the Journal of Electricity and Western Industry will more and more endeavor to collect industrial material and put it in form available for reference in the West, and we ask the continued cooperation of industry generally throughout the West to enable us to go forward in this work. The cordial response called forth by the June 15th issue of this magazine, encourages us to reach out yet further in our efforts to promote the upbuilding of the West.

Below are listed some of the features which will make the Journal of Electricity and Western Industry of concrete service during coming months to all interested in the upbuilding of industry in the West.

EACH ISSUE WILL CONTAIN:

Frontispiece

Editorials

Western Comment on Current Events with Letters to Editor
Editorial discussion of financial, trade promotion, legislative and other problems, also letters on important subjects from business leaders, representing the executives' own viewpoint on executive problems.

Builder of the West

The story of the men who have built the West and what they have done

Leading Articles on—

1. A power company topic—
Covering financial problems, public relations, sectional problems peculiar to the West, or the analysis of special engineering problems from the standpoint of economics and special service conditions.
2. An industrial situation—
Including the discussion of special industries from their business aspects, problems common to all industries, or production problems involving electrical applications, illumination, rate discussions, source of power, handling of electrical raw materials, stocks and supplies.
3. Problems of distribution and sales—
Of interest to dealers, jobbers and manufacturers
4. Special investigations on timely subjects—
The results of surveys or special analysis of business and other subjects of news interest.

Pictorial Series

Featuring applications of electric service—progress in the home, industrial and public utility construction, noteworthy

records in western engineering and interesting developments in industrial progress.

Increasing Mill and Factory Production

A department devoted to readers' suggestions as to short cuts and new power applications that have reduced the cost of manufacturing.

Study Course

Lessons on electrical, mechanical and business subjects of direct value to contractor-dealers, electricians, master mechanics in industrial plants and electrical salesmen.

With the Western Dealer, Jobber, Agent—

Business building suggestions for the store, distributions and warehousing methods, and advertising and sales promotion ideas.

ACTIVITIES OF THE WEST—BUSINESS-MAN'S SECTION

General News of the West—

News of selected interest, reports of western meetings and notes on dealer, jobber, and manufacturer activities.

Personals

Business Outlook in Western Market Centers—

The report of community thinking from the industrial centers of the West on activities that affect business conditions.

Construction News and Industrial Developments—

News of construction planned and under way in all industries, water permits, power and irrigation projects, etc.

Salvage

Cross angles and shadowgraphs on the comic side of the business world.

Western Comment on Current Events

Editorial Notes and Readers' Views on the Outstanding Aspects of Financing, Trade Promotion, Legislative and Associated Topics that have a Special Bearing on Western Business

State Power Aid for Municipalities Initiative Measure Prepared by California Cities to Provide State Credit for Public Development of Water Power

The first step in a municipal power development campaign has been made in the announcement of the launching of an initiative measure in California to place an amendment to the state constitution upon the 1922 ballot, providing for state credit for the development of state water powers by cities and other public groups.

Among those who took part in the drafting of the proposed act were Clyde Seavy, city manager of Sacramento and former chairman of the State Board of Control; L. L. Dennett, counsel for the San Joaquin valley irrigation districts and representing the valley counties in the State Senate; Dr. John R. Haynes of Los Angeles; William J. Locke, city attorney of Alameda and executive secretary of the League of California Municipalities; Mayor Louis Bartlett of Berkeley; W. N. Matthews, attorney for the Los Angeles Board of Public Works; S. C. Graham of Los Angeles; Dr. Horace Porter, Mayor of Riverside; ex-Senator William Kehoe, Franklin Hichborn of Santa Clara, Francis J. Heney of Los Angeles, Charles W. Cleary of Tulare county, Senator William J. Carr of Pasadena, J. L. Matthews of the State Water Commission, J. P. Mallon of Oakland, Judge D. J. Hall, city attorney of Richmond; Albert Braundschweiger of Riverside, ex-Congressman William Kent and Rudolph Spreckels.

Under this legislation there would be created a California Water and Power Board, consisting of five members, four to be appointed by the Governor and the fifth to be the director of the Board of Public Works, ex-officio. The salary of the chairman and executive officer is set at \$15,000, while the other members would be paid on a per diem basis of \$20.

The board is given strong powers in the act. Procedure by which cities, towns, irrigation, water, reclamation or public utility districts, acting singly or in groups, may enter into contract with the board for the construction of works and the supply of hydroelectric energy is provided. The contracting political subdivisions would agree to purchase power thus developed, and water, at rates which would repay to the state the principal, interest, and operation and maintenance charges in fifty years.

Issuance and sale of state bonds to the extent of the funds required for such undertakings, and the use of such funds for construction work, are permitted in the act. The ultimate state credit is limited to \$500,000,000. No burdens of either interest or principal are to be assumed by the state, except as the discharge of these obligations is assured from earnings of reclaimed water or power.

Other features of the proposed act include state assistance for political subdivisions in obtaining their own distributing systems and limiting of bond interest rates to 6 per cent.

This is frankly a step in the direction of municipal versus private ownership. With the present immediate need for power for western development, it seems a poor time to endanger the great power program already undertaken by the public service industry of this coast. The credit of the state of California is at the present time overburdened with the extravagant expenditures voted by each successive legislature. Why undertake a further enterprise against which there are so many sound economic objections to be urged?

Speakers' Bureau Organized in West Cooperative Campaign Announces Adoption of Liberty Loan Idea by Western Electrical Men to Support Power Securities

One of the most potent influences of war days in putting over Liberty Loan Campaigns, food saving drives and other wartime activities was the organization of speakers which was ready at a moment's notice to carry the desired story directly to the people in all parts of the country. In order that the true status of hydroelectric development and hydroelectric financing and its effect upon the future industrial and agricultural growth of the West may be better understood, active steps have been taken to form what will be known as "The Speakers' Bureau," according to a recent report of the California Electrical Cooperative Campaign.

A skeleton synopsis of the hydroelectric story has been sent to about seventy electrical men in different parts of California with references to published articles and compiled data, requesting that they prepare a two to three thousand word lecture to be delivered when called for.

It is proposed, in carrying out this plan, to furnish speakers who will present this subject at every opportunity to the end that people of the state shall fully realize the imperative necessity for going ahead with this work.

Meetings will be arranged and speakers assigned as soon as those chosen for the Speakers' Bureau have qualified.

In that it is a measure in the interests of the upbuilding of the West, the plea for support of the great power program outlined by the western public service industry has much of the appeal of the Lib-

erty Loan campaigns. What we learned during the war, was the value of publicity in a good cause. We are just learning to apply these lessons in the solution of industrial as well as civil problems.

Western Power Program Endorsed

Eastern Engineer-Manager Expresses Belief in the Brilliant Future Ahead for Western Hydroelectric Development

George O. Muhlfeld, a member of the firm of Stone & Webster, of Boston, Mass., is a recent Pacific Coast visitor. Mr. Muhlfeld has spent the last four weeks in visiting practically all of the larger hydroelectric developments of the West and has talked with many of the leaders in hydroelectric development in this section of the country. In speaking to a representative of the Journal of Electricity and Western Industry, Mr. Muhlfeld had the following to say:

"I have been immensely interested in visiting the various hydroelectric plants of the West during the past several weeks, and from my talk with executive managers, engineers and financiers of this region I have come to the firm conviction that the West in its hydroelectric program has before it a brilliant future. I like your spirit of optimism. Every time I come out here it does me good and I see in such immediate developments as the Colorado River project of the Southern California Edison Company, the Pit River development of the Pacific Gas & Electric Company, the Feather River development of the Great Western Power Company, and the great development on the San Joaquin River, both by the San Joaquin Light & Power Corporation and the Southern California Edison Company, combined with the future plans formulated for hydroelectric development in Oregon, Washington, Montana and Utah, a future vision of service in the upbuilding of industry in the West that can hardly be pictured in words. The people of your great West have confidence in the future—a future that spells present activity and growth and prosperity for the immediate months ahead. All this promises continuous service, cheap power, ever increasing population, industry and ample finance to build up here in the West the extensive agricultural, industrial and manufacturing program you have in view."

Mr. Muhlfeld has been associated on many of the great hydroelectric installations of the West and his company has designed and constructed such well known western hydroelectric plants as the Caribou Plant of the Great Western Power Company, the Big Creek development of the Southern California Edison Company, the White River development of the Puget Sound Light & Power Company, and many of the other noted hydroelectric installations. During the war period Mr. Muhlfeld was himself a notable figure in the work at Hog Island, where the United States Shipping Board undertook the development of the largest single shipbuilding plant ever attempted.

Abrogation of Contracts Questioned

Decision of Utah Utility Commission on Special Contract Cases Appealed to United States Supreme Court

An appeal to the United States Supreme Court has been taken by some of the customers involved in the "special contract" case, wherein the public utilities commission of Utah decided some time ago

that a number of the special contracts of large power customers of the Utah Power & Light company were discriminatory, and ordered same placed on standard schedules.

The appeal is taken to obtain final decision as to the right of the public utilities commission of Utah, under the law of Utah and the federal constitution, to change the rates fixed in the contracts, the contention of the appellants being that the contracts were signed before the utilities act of the state went into effect, and that the commission had no power to alter such contracts.

The commission assumed the power to change the rates in contracts after a long hearing, and ordered the consumers to pay on the standard schedule basis. This decision was sustained by the Supreme Court of Utah.

This is merely another angle of the question of the right of commissions to abrogate contracts. Western utility commissions have from the first contended that such action lay within their powers and have from time to time been sustained by the courts of their respective states. Undoubtedly there are specific instances in which individuals must feel that injustice has been worked by such a setting aside of long time contracts made previously to the inauguration of commission regulation, and in the course of human fallibility possibly such injustices occur, but it is obvious that if commission regulation is to be of service at all in distributing the burden of expense equitably, it must have jurisdiction over all customers of the power companies. The very act of regulation is a limitation of the rights of contract.

Of course, it is essential that all respective utility commissions should be of such calibre as to deserve the confidence of all parties whose interests are involved. We have entrusted these great powers in the assurance that they will be equitably used—and up to the present time the results in the main have justified this trust. There is no progressive thinker today who would go back to the old conditions of competition.

Washington Shows Industrial Growth

Manufacturers' Association Report Indicates Wealth Added to Community Through Electrified Factories

The growing importance of the West from an industrial standpoint is indicated by the statistics recently compiled by the Manufacturers' Association of Washington. Washington ranks second in importance among Western states in the number of factories it supports and the value of their output, California taking first place. According to these figures, Washington factories added \$366,433,000 to the wealth of that state during 1919. There were 4,919 factories in Washington, and during the year, they manufactured products valued at \$809,635,000, this valuation representing their selling value or price at the plants, as actually turned out by the factories during the census year, and is not neces-

sarily the gross sale value of these products. During the year mentioned, there were 150,482 persons engaged in the factories and the payroll for the year amounted to \$225,757,000. The enormous amount of energy involved in carrying on these manufacturing enterprises may be gathered from the fact that 587,702 hp. was daily engaged by the factories in carrying on their activities.

Improved Business Means Utility Sales

President of Jobbing House Sees Bright Future Ahead for Western Utility Securities in East

T. E. Bibbins, president of the Pacific States Electric Company, who has just returned from an extended trip through the East where he has called at many eastern business centers, reports brighter prospects ahead for the fall. Mr. Bibbins looks for adequate support of the western power program in coming months. He writes to the Journal of Electricity and Western Industry:

The paramount thought which I have brought home is a well defined optimism as to our ultimate future coupled with the necessity for economy in our present period. The East undoubtedly has suffered greatly but is coming through the test in fine shape. Those who are in close touch with the situation seem to feel that this Fall and probably next year will show recovery, but at a very slow and conservative rate. While the West is feeling a depression there is every promise that we will not experience the same depth that is now being experienced in eastern circles. There is abundant evidence that prime public utility securities will find a ready market at considerably smaller cost in interest than heretofore, and to my mind this is the most hopeful sign of all.

Business Paper Features Electricity

Chamber of Commerce Publication Attributes Great Industrial Progress of Northern California to Electric Power Facilities

In the leading article of its issue of July 29, San Francisco Business, weekly publication of the San Francisco Chamber of Commerce, reviews the important part played by the electrical industry in the development of Northern California. That industrial progress and electrical progress are inseparable is the keynote of the article which is contributed by Robert L. Eltringham, Manager of the California Electrical Cooperative Campaign, and indicates the growing spirit of cooperative effort between the electrical and industrial interests. The author says in part:

A growing number of industries in San Francisco are wholly dependent upon electrical current for their existence.

The growth of the electrical industry is a standing invitation to large industrial plants to locate here. Eastern factories are expanding, but not on their own sites. The coal situation is far too acute to encourage Eastern plants to expand. Instead they are seeking new locations in districts where the modern substitute for coal, electricity, can be assured in quantities to meet their requirements.

Numbers of California industries have been electrified, to a greater or lesser degree, for many years, but it is only recently, with the augmented industrial activity of the West, that there has come any clear realization of the community of interest between those who develop the power and those who use it.

It is a healthy sign, and one which promises much for western individual progress, when Chambers of Commerce and other organizations devoted to promotion work, lay special stress upon the major importance of electrical development.

Letters to the Editor

CHOOSING THE SALESMAN WITH RETAIL EXPERIENCE

To the Editor:

Sir: In addressing a group of jobbers recently, I was stressing the importance of the present day necessity for jobbers' salesmen to be real merchandisers. In illustrating my point I told them that from my own observation, the reason why the hardware jobber's salesman is selling more heating appliances today than the electrical jobber's salesman is because of the fact that the majority of hardware salesmen are recruited from the ranks of the hardware retail clerks, whereas the electrical jobber's salesman usually gets his training in a wholesale house. This point seemed to create quite some comment, and while some agreed with me, there were others who did not, but it set a lot of them thinking.

As you know, the average hardware salesman works a small territory and works it so intensively that he could take off his coat and handle the business over the counter for almost any one of his customers, whereas the mere suggestion of having an electrical jobber salesman do that for his electrical customers is not to be thought of. I maintain that the training which a man gets in a retail store is really a necessity if that man is to become a first-class jobber's salesman.

In building up the electrical industry, I am wondering if the electrical jobbers feel that it is necessary for them to recruit their salesmen from retail stores. To my mind in these days when only first-class merchandising ideas are making sales, the man without the retail experience is sadly handicapped, and that is why the hardware salesman is making a better job of it today than the electrical salesman.

B. E. ROWLEY,

District Sales Manager.

Edison Electric Appliance Co., Inc.
Salt Lake City.

TO "DIP THE LIGHTS" A SERIOUS MISTAKE

To the Editor:

Sir: In regard to the movement on foot to have all power companies "dip the lights" at eight o'clock each evening, I think any attempt to put such a practice into effect would be a very serious mistake for many reasons.

In the first place it is the endeavor of every operating company to give as near 100% service, both as to continuity and voltage, as is possible and large sums of money are being spent in improving plant facilities to accomplish this result. Any deliberate

disturbance of the voltage even for the proposed purpose would in my judgment meet with the almost universal disapproval of consumers.

From the viewpoint of the lighting consumer the hour selected could not be at a more inopportune time but the most serious objection would come from the power users and particularly those operating synchronous or induction motors equipped with low voltage cutouts where an appreciable lowering of the voltage would cause the motors to shut down.

The far reaching effect of this will be appreciated when you consider that practically all irrigation and reclamation pumping plants, as well as many industrial plants, are operated without constant attendance and the delay and expense of getting them started again would be very objectionable.

From an operating standpoint I see no serious practical difficulties that could not be overcome, although on a large net-work of lines supplied with power from a number of different sources the supplying stations would have to act simultaneously in lowering the voltage in order that the desired result might be accomplished with a minimum disturbance due to the drop.

Stated briefly I think the scheme is an undesirable one from every viewpoint and would not long be tolerated by the general public.

P. M. DOWNING,

Vice President in charge of Electrical Construction and Operation.

Pacific Gas & Electric Company, San Francisco

OIL SUPPLY NOT NEARING EXHAUSTION

To the Editor:

Sir: The Journal of Electricity and Western Industry published the following statement in its issue of June 15th:

"With oil production in California at its maximum and predictions varying from ten to twenty years as to the period before its exhaustion, California is already using more oil than it produces."

This would seem to imply that the oil production of this state has reached its peak and consequently, due to the increased demand for oil, the supply will eventually be exhausted in ten to twenty years. We cannot agree with this conclusion owing to the fact that at the present time, California is producing more oil than ever before in its history. The daily production for May ran about 337,000 barrels, and it is expected that this year's production of oil will amount to 120,000,000 barrels compared with about 105,000,000 barrels in 1920.

By reviewing statistics covering the oil production in this state since its early discovery, it is to be noted that whereas in 1876 the production of oil was 12,000 barrels, it has steadily increased until in 1920 it reached a total of 105,700,000 barrels. This increase has been steady each year with the exception of the years 1889 to 1893, inclusive, when the production fell off due to decreased output in Newhall and Ventura counties, but in 1894 the Los Angeles and Salt Lake fields were brought in and about 1900 the Kern River, McKittrick and Big Midway fields started producing oil, so that the output increased

rapidly, gaining each year with the exception of the year 1906, when the production fell 2,000,000 barrels, and finally reached 103,600,000 in 1914. In 1915 to 1917, inclusive, the production fell under 100,000,000 barrels, but in 1918 it again reached over 100,000,000 barrels and has been increasing up to the present writing.

The increased production this year is due to the establishment of two new proven fields, namely, Elk Hills and Huntington Beach, and just recently it looks as though Signal Hill in the Los Angeles district will open up a new territory.

We do not think that you can safely make predictions covering the length of supply of oil by simply taking figures published at present concerning the available quantity in reserve in the ground and dividing the present yearly consumption. One very important factor concerning the production of oil is that of the economic question of supply and demand which, of course, regulates the price of oil, and when the demand is great and the price accordingly high, there is considerable incentive to prospect for oil in new fields, and it is this fact which has helped as much as any other in increasing the production of oil in this state as well as in this country in general. When the demand drops off and the price falls, as at present, naturally considerable wild-cattling and prospecting is going to be curtailed, as well as production from proven fields, in order to protect the industry and maintain a price at which it is profitable to produce oil.

Just at present, especially through the mid-continent district, various plans have been made covering the curtailment of oil production, as the price there, as well as in Texas, is now about one-third at the wells what it was at the beginning of the year, but in spite of these various plans, the production has fallen off very little. We think it safe to say that, had the demand for oil continued so that the price could have been maintained, the production in this country today would be considerably more than it is at the present time.

Another consideration which will have a bearing on the prevention of the exhaustion of the oil resources of this state is the campaign now on by the public utilities companies of this state in the development of hydroelectric power and the substitution of this form of power for that generated by steam, consequently releasing oil now consumed in generating power for other industries in order to keep up with the demand.

In stating the case for California oil, we do not wish you to infer that we are in any way opposed to the development of hydroelectric power in this state, and we think it safe to say that the oil industry in general welcomes the continuance of this work, but we do think it rather unfair to imply that the oil industry of this state is going to cease in any length of time like ten to twenty years.

S. T. CARR,

Sales Manager.

Petroleum Rectifying Company of California,
San Francisco.

Builders of the West

THE origin of the canning industry dates back to the days of Napoleon when that general offered a prize to anyone who could invent a way of preserving food to supply his army on their long marches. A French chef chanced on the secret of hermetically sealing containers and thus laid the foundation for the present fruit industry of the West. A little later the American civil war raised a similar demand for preserved food and the canning industry west of the Rockies actually started.

Following its warlike origins, the next important event which should be chronicled in the history of fruit canning is the birth of the Bentley brothers, Robert and Charles, in San Jose, California. With single-minded unanimity they proceeded to devote themselves to the canning industry and have followed that interest from their earliest years to the present time. During school days they spent their vacations in the canneries located in the fruitful Santa Clara Valley—and even when R. I. was attending the College of the Pacific, while Charles took his honors with the famous class of '91 at the University of California, they used to get together during the summers for a little canning experience. By the time Charles was through school, they were thoroughly familiar with the problems of preserving, and their first step was to take over a fruit business in Sacramento under the name of the Sacramento Packing Company. With R. I. Bentley as general manager and C. H. Bentley as sales manager, the business was soon prospering and branches were established throughout the state. Pioneer work was done in introducing California canned and dried fruits in foreign countries.

The Bentleys have always stood for cooperation with the other forces in the industry and in consequence when the California Fruit Cannery Association was formed in 1899, it was natural to find them in the forefront of the amalgamation. The two brothers came to San Francisco at this time, R. I. as general manager and C. H. as sales manager of the new concern.

The same principle of merging forces was carried out again in 1916, when four of the best known packing and canning companies in the state joined together to form the California Packing Corporation. The Bentley brothers again were asked to take the positions of general manager and sales manager respectively, and it has been under their direction that this organization has made its great success. R. I. Bentley has recently become president of the company.

The California Packing Corporation now stands as the largest company of its kind in the world. It includes almost everything in the line of preserved food among its output, with the exception of milk and meats. From the fruits and vegetables of California, it has spread to the pineapple of Hawaii and the salmon of Alaska. With the addition of dried fruits and the inclusion of many brands and grades among its products, it has introduced a great flexibility into the canning business, so that full advantage may be taken of what-



ROBERT I. BENTLEY

President and general manager respectively of the California Packing Corporation, whose constructive work has done much to raise the standards and extend the markets of the canning and dried fruit industry and to develop the world-wide field in which western products have now become familiar.



CHARLES H. BENTLEY

ever crop offers. The California Packing Corporation was one of the first of western firms to enter the field of national advertising and its effective color pages have done much to popularize California fruits in eastern markets. Not less important in building up western standards has been its contribution toward square dealing and the maintenance of a high quality. The principle of amalgamation for which it has stood has given the company a stability which has placed it on a higher standard of production than can always be maintained by smaller concerns.

Since the days when he served on the University of California football team and was elected to the Phi Beta Kappa and whatever other honor societies the college afforded at that time, Charles H. Bentley has taken an active part in the civic welfare of his community. At one time he served somewhat against his will but in the interests of good government, as a member of the Board of Trustees of Sacramento. He was a member of the original Board of Governors of the Commonwealth Club. At the time of the earthquake and fire in San Francisco it was he who took the prompt action toward securing an investigation of fire insurance settlements which undoubtedly saved from fifteen to twenty millions to the stricken property owners of that city. Shortly following the rehabilitation of the city, he served as president of the San Francisco Chamber of Commerce. Since 1907, he has served as a trustee of the San Francisco public library. In 1917 he went to Washington as Advisor on Canned Goods to the Committee on Supply of the Council of National Defense. Later he served on the Executive Staff of the Food Administration and represented the Food Administration on the War Industries Board.

To R. I. Bentley and to his brother, Charles H. Bentley, for their contribution toward the upbuilding of the West through the avenues of public service and through their constructive work in forwarding the western canning industry, this issue of the Journal of Electricity and Western Industry is affectionately dedicated.

Growing Western Food Industries Demand Foreign Markets

An Analysis of the General Market Situation Which Is Now Confronting the Western Food Products Business With a Discussion of Its International Aspects

BY HILMER OEHLMANN
H. M. Newhall & Company

During the war the demand for preserved foodstuffs increased tremendously, and especially after the United States entered the struggle and embarked upon its project of training millions of men for military service did it appear impossible for the canners to produce sufficiently large supplies of preserved fruits, vegetables, salmon, and other goods to supply the needs of these armies. Great quantities of canned goods were shipped to France and to other countries where American and allied troops were operating.

Factors of Temporary Depression

Then came the end of the war, and with the demobilization of the armies in Europe the enormous stocks of provisions carried from America for their use were thrown upon the various markets for civilian consumption. In this manner a great many communities were made familiar with preserved foods which were hitherto practically unknown to them. However, in consequence of the severe industrial depression which followed the war, the standard of living in most countries declined too much to permit the continued consumption of these goods, many of which were regarded as luxuries. In fact, some of the countries which had imported substantial quantities of canned fruits from California in former years placed these upon their luxury lists and enacted laws prohibiting their importation. Germany is the most important of our buyers which passed such a measure, and in Norway and Italy also the prohibition is still effective.

The greatly enhanced value of the dollar in terms of the currencies of practically all other countries of the world is also a factor of tremendous importance in the curtailment of purchases, especially of non-essentials, such as canned fruits. Prices which had risen to unheard of figures in consequence of the great demand and high cost of production brought about by the war became prohibitive to the civilian populations after the conflict was brought to a conclusion. Even after the price decline was well under way here, the high exchange rates still

kept foreign countries from buying and this condition is contributing largely to the present inactivity.

Home Competition to Be Met

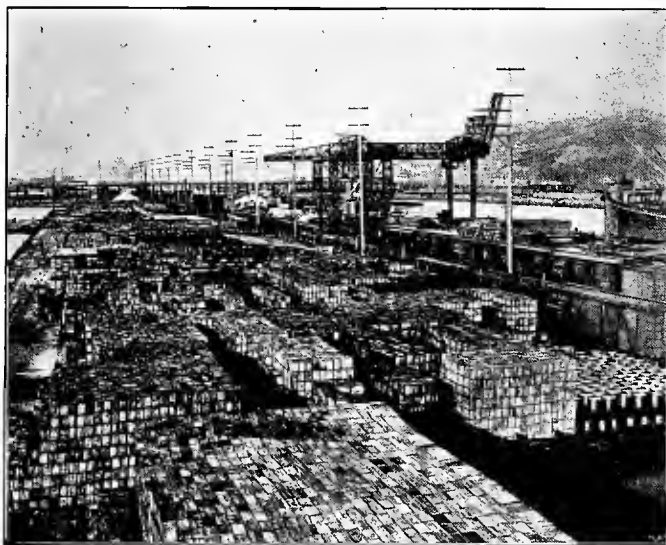
The circumstances set forth above may be considered as of temporary duration, but there is a new factor which is regarded by exporters of California canned fruits with growing concern. This is the development of fruit canning industries in other countries of the world. It is true that California has great natural advantages for the growing of certain fruits and has thus far enjoyed a practical monopoly in the canning of these. But prices of western fruit, which are already high enough, must be increased

in foreign markets by the amount of a substantial import duty which gives an advantage to locally canned fruits. Furthermore, there is no great difference in the quality, as the technical processes of manufacture in Spain and other countries has undergone great improvement. Switzerland, formerly a buyer of California fruits, is developing a considerable fruit canning industry, and in spite of the limited producing area, has been able to export small quantities to various other countries. Australia, for some time a large

manufacturer of jams, most of which were destined for the United Kingdom, is now selling large quantities right here in California and is commencing also to export canned fruits. Certain sections of Argentina which have passed through the successive stages of herding and extensive agriculture, are now busying themselves with fruit culture, and canning is already being done in a small way. It is readily conceivable that the possibilities in that country are very great indeed.

The Local Canning Situation

The local canning situation has much to do with present market conditions; 1919 and 1920 were years of unprecedented activity in the industry. During the previous two or three years there has been enormous increases of plant and equipment, and many new enterprises were launched, some of which paid for their construction with a single season's pack, so great was the demand for their prod-



The markets of the Orient are growing in importance in their consumption of western food products. Five hundred million dollars in foreign trade was handled over the Seattle dock here shown during 1919. The stacked cases contain vegetable oils from the Orient, which are among the products sent in exchange for western canned goods and dried fruits.

ucts. At the beginning of the canning season in 1920 there were still considerable quantities of 1919 fruits which had not moved into channels of consumption, but the bulk of the pack was at least in second hands and the tide of business prosperity was still rising, and, consequently, the canneries operated during 1920 at full capacity. The cost of sugar and fruit was higher than ever before, and wages had increased in proportion. It was considered necessary and justifiable then to name higher prices for canned fruits than had prevailed in 1919.

During the summer of 1920 the period of prosperity and rising prices culminated, the decline set in, and the pack of fruits did not move as anticipated. The demand from foreign countries had fallen off almost entirely, and by the end of the year business was practically stagnant, and there was little interest shown, no matter at what price goods might be available. After the first of the year some activity was again felt, but prices had sunk 35 per cent to 60 per cent below the opening figures and it was between these limits that most of the pack actually moved into consumption. Part of the carry-over from the 1919 pack was sold at even lower prices.

Troubles of the Present Season

This left the canners and canned fruit dealers in a very unfavorable position, and during the present year there have been a number of failures and reorganization processes among important producers and factors in the industry. In other seasons when there was a large booking of future orders, canners could approach their bankers on the strength of these and secure the necessary funds to finance their packing operations. This year, however, is one in which purchases are only being made in accordance with current requirements and the canners are finding it difficult to secure advances on their pack. This circumstance, together with the very absence of a volume of orders warranting full operation, and the withdrawal of a number of producers will make for a greatly restricted pack of fruits.

Vegetables Absorbed by Domestic Markets

Our vegetable canning industries are in general subject to somewhat different conditions. Asparagus, particularly, is a commodity for which the demand has usually greatly exceeded the supply, as the producing area is very limited. It is true that there was a considerable carry-over of certain grades from the 1919 pack, but the domestic market is more than able to absorb all that can be produced, and the existence of such stocks at the end of the season was due wholly to the reluctance of the holders to reduce their prices to conform with the trend of the market. Lack of future orders when opening prices were named this spring carried a very light pack, and buying has meanwhile been sufficiently heavy to warrant several advances in list prices.

The pack of spinach was small and most of it disposed of very shortly after the packing season. Tomatoes, peas, string beans and other vegetables commonly canned are grown also in many other sections of the United States, and the quantities packed

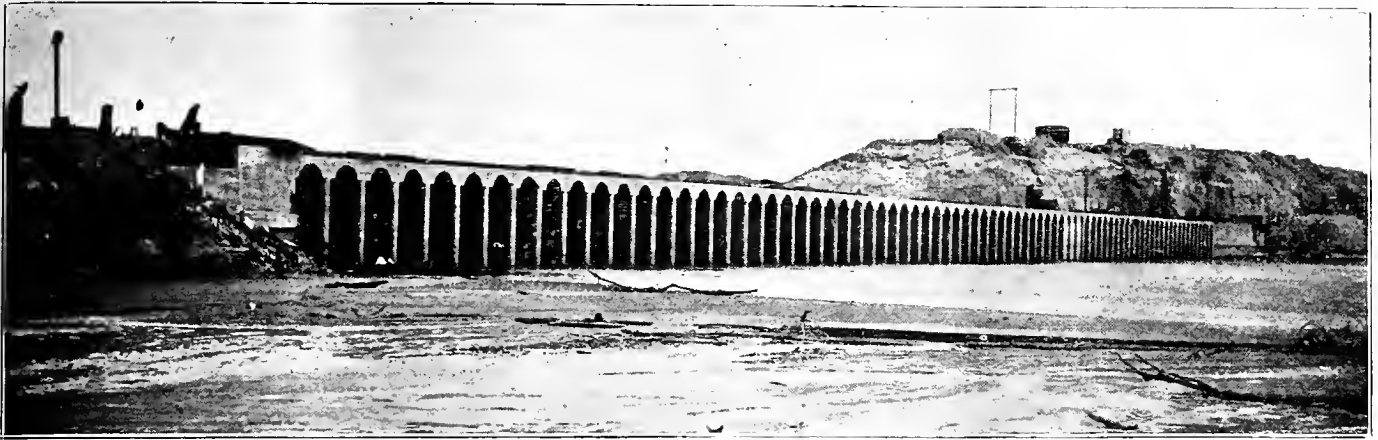
on the Pacific Coast ordinarily go into local consumption, although there is a movement between the various parts of the country, depending upon the respective quantities produced by the sections to which the industries are limited.

The Future for Western Canned Goods

In view of the several circumstances mentioned above, it is difficult to make an accurate prediction of the future of our canned goods industry. A careful consideration of their respective importance, however, would probably justify the belief that our comparative advantage in the production of certain varieties of goods for canning and our expertness in the technical processes of preparing them will enable us to continue as a very important, probably the most important, supplier of these. While it may be some time before the output of war days is again attained and absorbed at prices leaving a fair margin to the producer, the very restriction of production which is rendered inevitable for the reasons set forth, will bring the industry back most rapidly to a healthy state. It is reasonable to expect also that the coming years will bring the exchanges of foreign countries again into a more favorable relation with our own currency and thereby increase their ability to buy our goods. Finally, the standard of living will continue to advance in this country and abroad, when regarded over a long period, to an extent which ultimately will bring about consumption of our own canned goods as well as those of any competitors we may then have. It is well to remember that the consuming powers of the vast populations of the Far East will be exploited as the development of the resources of their countries progresses.

Foreign Markets Needed for Dried Fruits

The dried fruit industry is far more dependent upon the export market than that of canned goods. Enormous quantities of prunes, dried apricots, peaches, apples and pears have been shipped to the markets of western Europe and to some extent to many other countries of the world. But just as our successful development of the fruit drying industry is dependent upon Europe, so Europe is dependent upon the Pacific Coast for its supplies of fruits which cannot be successfully dried to any great extent in other countries. The Balkan States furnish some prunes, but the quantities are not nearly sufficient to supply the demand. The warm dry climate in our fruit growing regions during the summer months makes the Pacific Coast of our country an ideal section for the proper preparation of dried fruits, and as these are not luxuries, at least to the extent that this is true of canned fruits, the depression of the market has been relatively short-lived, and Europe is again actively inquiring for California fruits. Apples are not ordinarily sun-dried, but are prepared in artificial dehydrators, and as New York also dries considerable quantities of apples in this manner each year, we have competition from that source for the European business. On the whole, it may be said that the prospects for continued prosperity of our dried fruit industry are very good.



Rockwood Gate at the head of Imperial Canal, part of the tremendous works which are being maintained by the Imperial Irrigation District to protect their interests from flood and to provide the necessary water for irrigation. Evaporation and silt problems must be carefully studied before any development is carried out on the upper river, in order that nothing be permitted to obstruct the normal flow at low water stage.

Solving the Complex Problem of the Lower Colorado River

The Need for a Unified Handling of Irrigation, Flood Control and Power Questions on the Colorado in Order to Secure Maximum Benefit to Southwestern Development

BY C. E. GRUNSKY
Consulting Engineer, San Francisco

The extension of irrigation with the waters of Colorado River, particularly in Imperial and Coachella Valleys, California, which has received serious consideration during the last few years, involves regulation of the stream flow by storage. The Colorado River annually delivers into the Gulf of California a great volume of flood water, which is not alone waste water but which at the height of the spring floods becomes an annual serious menace to the entire developed area on the lower river both in the United States and in Mexico.

This year's menace, more serious than usual, has just been safely passed. The levees have held, though with so slight a margin that for a time hope of holding them was almost abandoned. The situation in the matter of securing adequate protection against flood water is particularly bad for a number of reasons, not the least among which is the fact that the battle against the flood water which threatens the Imperial Valley must be fought in Mexico.

The levee which forces the Colorado to flow south from the Volcano Lake region in Mexico instead of flowing north into Salton Basin, California, is known as the Volcano Lake levee. The principal section of this levee extending easterly from Cerro Prieto, an outlying volcanic spur of the Cocopah range of mountains, has been built up in successive stages to a height of about 14 ft. It has a broad crest carrying a railroad track and has a rock faced water slope. Before 1908 no levee was here required. A small portion only of the flood flow of the Colorado then reached Volcano Lake and the natural ground north of the lake was not overtopped by flood waters. But in 1909 the river changed its course. It left its old bed just south of the south line of Arizona, breaking its westerly bank and taking a westerly course toward and into Volcano Lake. The river at

its high stages has ever since been submerging large areas in the vicinity of the lake and has practically obliterated the original lake by silt deposits. The river carries enough silt to cover in a year about 150 square miles of territory one foot deep.

An International Problem

Since 1909, this river silt has to a large extent been dropped by the river water in the Volcano Lake region. Into this same region much driftwood and rubbish are delivered during the river's annual high stages and the general flooding which takes place in the spring and early summer has stimulated a naturally vigorous plant growth. The silt and drift barriers and rank growth of weeds, willows and grass have combined to check the escape of water from the Volcano Lake region, with the inevitable effect of forcing the waters in this region to annually higher levels. The flood plane is rising at the rate of about one foot per annum. It has been necessary to keep pace with this rise in the matter of levee building. And so it happens that the most directly interested organization, the Imperial Valley District, through the agency of a subsidiary Mexican corporation, is forced to do a large amount of protection work in foreign country. About \$6,000,000, of which the United States contributed \$1,000,000, has already been expended in Mexico to safeguard and protect lands and other property in the United States.

Storage Dams First Step

What is needed, of course, is flood control under the cooperation of the United States and Mexico. But a first step in this direction will have been taken when either the dam at Lee's Ferry above the Grand Canyon is constructed by the Southern California Edison Company, or when the United States builds

the Boulder Canyon dam to provide better irrigation service and to extend the irrigated area in the Salton Basin, California, and elsewhere. The construction of either of these dams will make the generation of a large amount of power possible. Either of these dams, whose height of 500 ft. or more will constitute a record, would create enough storage space to hold more water than the lower river carries in a normal year. The construction of either one of them would provide means for cutting down the peak of floods while supplementing the natural low water flow of the river from storage.

Proposed Developments

The Boulder Canyon dam, located below the Grand Canyon, is proposed as a feature of a project—the investigation of which was authorized by Congress—under which some 300,000 to 400,000 acres of land not now irrigable in the Imperial and Coachella Valleys would be brought under control. The cost of constructing it would be distributed to the lands which are to be served with water from storage and to Los Angeles, San Diego and other cities of the Southwest which are desirous of sharing in the power output.

The Lee's Ferry dam, in a location above the Grand Canyon, is to be constructed—if the necessary permission is granted by the Federal Water Power Commission—under more or less cooperation of the electric power companies of the Southwest, and a storage capacity of 40,000,000 acre-feet is talked about as a possibility. Data are not at hand which would enable accurate estimates to be made of water storages and power output and economical features by such reservoirs nor even, with any great degree of precision, of the depletion of the river's aggregate annual water output that would result from evaporation losses. It appears that careful consideration will have to be given to these losses, as also to the rate at which any reservoir constructed on the main Colorado river will trap the river silt.

Safeguarding All Interests

If a permit is granted for the Lee's Ferry dam, this will undoubtedly be coupled with such conditions as will protect in reasonable measure the more or less conflicting requirements of those who wish to use the stored water for power, of those who wish to have the water released when it will do the most good to the farmer, and of those who need protection against floods. At any rate, under the Water Power Act all rights granted will be subject to recapture by the United States at some future time and modification of terms then becomes possible. Likewise if the Boulder Canyon dam is built by the United States for a group of districts or for a number of districts and cities, there will no doubt be conditions of use prescribed, or control reserved, such that the greatest good to the greatest number will result from the utilization of the reservoir space.

Any regulation of the flow of Colorado River by storage can be made of benefit to Mexico as well as to the United States. Before any large storage project is carried out there should, therefore, be proper

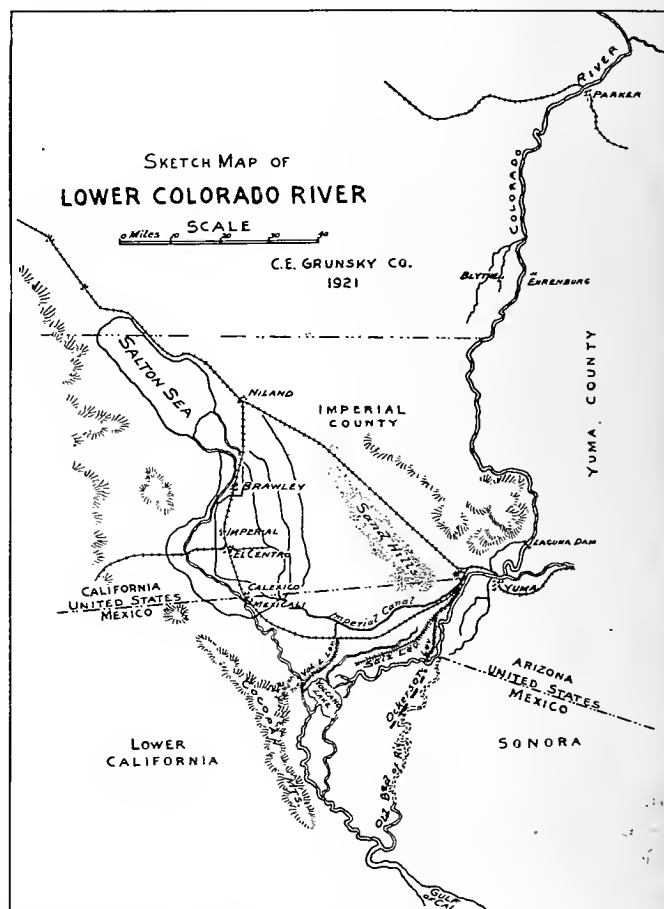
cooperation with Mexico sought in order that Mexico may contribute in reasonable proportion to the cost of any works which are planned to be of mutual benefit.

Storage a Necessary Factor

In reporting to the Secretary of the Interior on the problem of the Lower Colorado River, in 1907, the writer expressed the following view as to the necessity of providing storage:

"Storage is essential for the regulation of the river's flow to meet the needs of the land, to make the surplus of the spring months available in summer and autumn. Consequently storage of the river's flood waters must be made a feature of every general Colorado river project. Storage to a considerable extent is feasible, moreover, as it is known that large reservoir sites exist on some of the tributaries of the main river, and a combination storage and silt trapping reservoir at some point below the Grand Canyon is not out of the range of possibilities."

"It may be assumed as one project after another is carried to successful completion by private enterprise or under government aid and supervision, that the shortage of water will in the course of time, at certain seasons, become a matter of moment and will be made a matter for joint



The international aspects of the problem are clearly shown by a glance at the map. Most of the important levees and a large part of the irrigating canal is below the border and dependent on Mexican cooperation.

action by all parties at interest, or, possibly congressional approval might be secured of a comprehensive project for this river, which would at the outset include this storage feature."

"In the consideration of an arrangement with Mexico it should, however, be made clear that the extension of irrigation in the United States will materially deplete the ordinary flow of the river below Yuma, and that ultimately, * * * the United States would be compelled at times to furnish to Mexico, some water from artificial storage basins to meet deficient river flow."

Solving Special Lighting Problems in the Modern Cannery

Illumination an Important Factor in Bettering Working Conditions Under Exacting Requirements of Night Work During Rush Season in Modern California Factory

BY WARREN ALDEN
Benjamin Electric Company

Proper illumination, either artificial or daylight as a factor in increasing production in the canning industry cannot be over-emphasized, as the grading and sorting of the various fruits that are canned throughout the year is of prime importance to the success of the business.

Due to the obvious fact that the operations of the canning industry are confined to comparatively short periods of the year, naturally it is necessary to provide good lighting equipment, so that if called on, the plant can operate day and night until the run of fruit coming in is exhausted.

The lighting arrangement throughout the entire plant should be so arranged that the intensity of illumination is practically uniform throughout, and shadows are reduced to a minimum. This is of

on one circuit in a panel board, and controlled by a switch located therein. This arrangement gives a very flexible control of the lighting needs.

The peaches go through several processes needing good lighting. They are cut in two, stone removed, and sorted into three or more grades by girls seated at long cutting tables. As mentioned before, special care has been taken to provide adequate illumination over this section of the building. The reflectors with 200-watt lamps give a very uniform and even distribution of the light flux.

The turn-over tables turn each peach over on flat side, and enable sharp-eyed women to examine each individual fruit for blemishes and imperfections as they slowly pass by. This is a place where very good lighting facilities are needed and are pro-



Daylight view. Bright and cheerful surroundings are essential in obtaining the best work from women employees.



Night conditions duplicate those of day. Units are carefully selected and spaced to avoid shadows at critical points

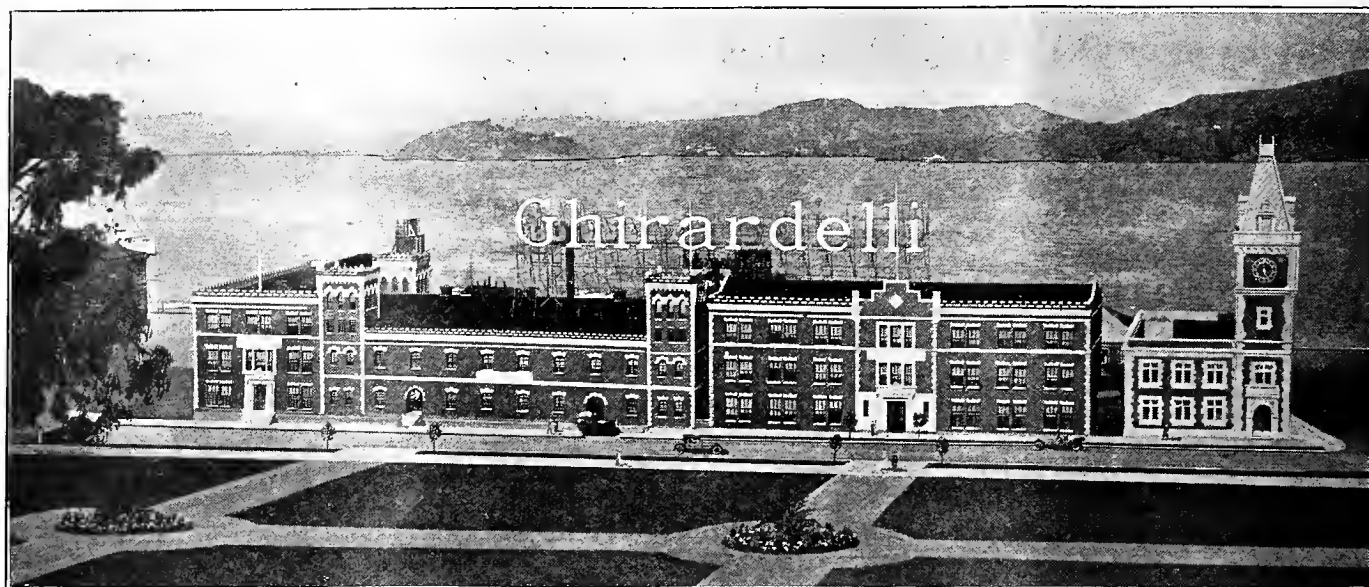
vital importance to this sort of institution on account of the large number of women employed, as light has a very definite influence upon the working ability of the occupants of the room.

The modern plant of the Pratt-Low Preserving Company, located at Santa Clara, California, is an example of what can be done in this respect.

The plant is of the sawtooth style of roof construction, thereby obtaining the best of the daylight, and is equipped throughout with Benjamin R. L. M. one-piece reflectors, spaced 18 ft. apart and 14 ft. above the floor. These reflectors are equipped with 200-watt gas filled lamps, and produce a lighting effect which almost equals that of daylight, enabling the work to proceed equally as well at night as during the daylight hours. The lighting arrangement over the cutting tables has been given special care, so that no shadows are cast in front of the girls as they sit and cut and sort the fruit. The three lights over each table are controlled by the means of an indicating snap switch, located on an adjacent post. In addition to this, each set of six lights are grouped

vided by means of three Benjamin R. L. M. reflectors, spaced on about 10 ft. centers, and equipped with 200-watt gas filled lamps, mounted 9 ft. above the tables.

The fruit is then transferred by means of moving belts to the graders, which automatically grade according to size. Each size, as it comes off the grader, is picked up and conveyed to the canning tables, and there carefully placed into the cans by highly trained women. This is one of the most important steps in the process of canning, and the lighting facilities are taken care of by means of Benjamin R. L. M. reflectors equally spaced throughout the entire area, and equipped with 200-watt gas filled lamps, mounted about 14 ft. above the floor. This eliminates shadows to a minimum, as the light at any one point is always coming from two or more sources. Extreme care is taken in the canning process to again resort the fruit into from five to six grades, so that the need of exceptionally good lighting is obvious. From here on the process is entirely automatic.



Typical of the clean and attractive factories which cheap electric power makes possible is the Ghirardelli chocolate plant in San Francisco. The great electric sign is visible at a great distance at night, and from almost any section of the city.

Electrical Service Aids a Leading Western Food Industry

How the Introduction of Electric Drive Has Improved Operating Conditions and Lowered Production Costs in Chocolate Manufacture Is Brought Out in Interview with Alfred Ghirardelli

The importance of the chocolate industry on the Pacific slope is indicated by the fact that of all the chocolate and cocoa consumed in this region, approximately 90% is manufactured locally. The industry is in a sense self-contained: enough is produced to meet the major demand of the entire western market, making eastern and foreign products non-essential, while at the same time the amount shipped east by western manufacturers, or exported to the Orient, is in most cases practically negligible.

There are seven manufacturers of chocolate in the West—one each in Seattle, Los Angeles and Salt Lake City, and four in San Francisco. Their combined output amounts to about 23,000,000 pounds of chocolate and cocoa annually, of which the D. Ghirardelli Company of San Francisco produces about 15,000,000 pounds, with a value for 1920 of \$3,843,000.

The output of the Ghirardelli plant has greatly increased since the installation of electric drive in 1902, and again since 1911 when various extensions and improvements were made in the electrical equipment. The total installation at present amounts to 820 hp., including one 40-hp. motor, two 35-hp., two 30-hp., six 20-hp., thirteen 15-hp., twenty-one 10-hp., nine 7½-hp., twelve 5-hp., two 3-hp., and three ½-hp.—seventy-one motors in all. These are a.c. motors operating at 220 volts on power supplied by the Great Western Power Company. The electrical consumption was 1,521,000 kw-hr. in 1920.

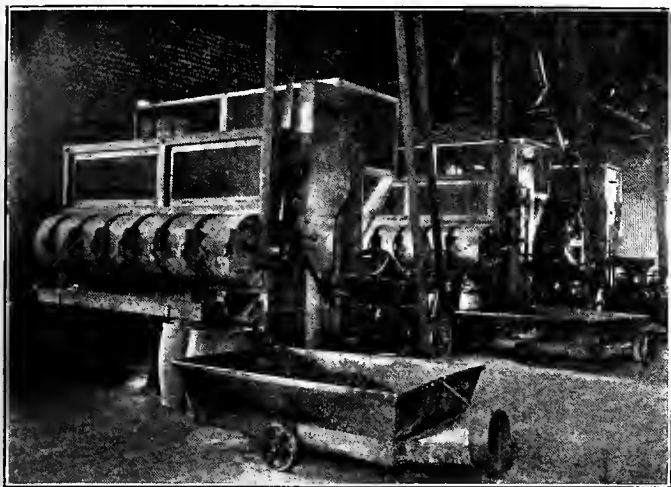
The change to electrical operation was made in the interests of economy, and the results have fully justified all expectations. This is largely due to the flexibility of the individual drive possible under the

new system—a very important factor where the successive processes of manufacture involve a large number of different machines.

Two complete sets of machinery are kept in operation in two adjoining buildings, the one set turning out powdered chocolate, and the other the various kinds of cake chocolate—plain bars, nut bars, “favors,” flicks, and so forth.

The cocoa beans, weighed and blended, are first put into oil-heated roasters which have an electrically operated revolving drum inside. After cooling on an exhaust fan, they pass through the crackers which remove the shells and crack the hot beans into small pieces, at the same time segregating the shells, which are later used as supplementary fuel in the boiler house. The next process is accomplished by the mills, of which there are twenty-one, with three pairs of circular stones modeled after the old-fashioned millstone. Here the beans are ground, the friction melting the butter fat and reducing the mass to a thin paste. These mills are driven in pairs by a 10-hp. motor. The paste is treated in hydraulic presses which press out a great part of the cocoa butter under a pressure of 6000 lb. to the square inch, leaving a round dry cake containing about 24% of cocoa butter.

On the floor below these cakes are pulverized and mixed with sugar, about half cocoa and half sugar for the sweet ground chocolate. This mixture is cooled and sifted and passed down to the next floor where electrically operated automatic weighing machines fill and weigh the cans and pass them on to be capped. For cocoa powder nothing is added, but the process is the same.

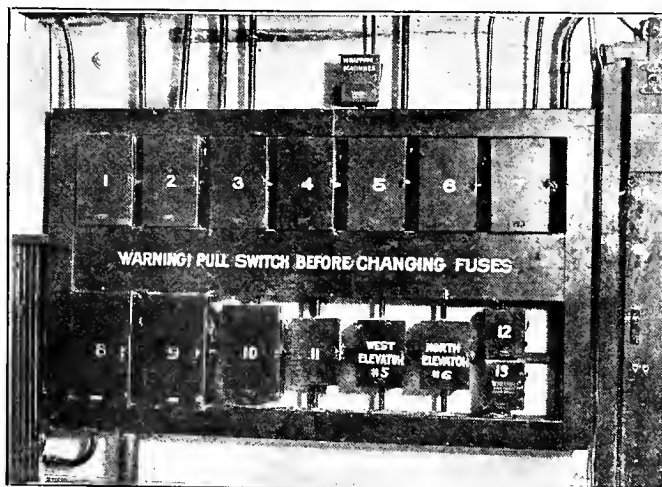


Machines in which the roasted cocoa beans are shelled and cracked before being crushed for making powdered chocolate.

The process for the cake chocolate is somewhat different. The roasted and ground cocoa beans, containing all the butter fat, are mixed with sugar and then passed between steel rollers similar to those used in paint mills. Additional cocoa butter is added. In the case of milk chocolate, a certain quantity of sweetened milk is mixed with the chocolate. This mixture is put into a mixer called a melangeur, similar to a "Chili Mill," and agitated continuously at a fairly high temperature until it is thick, and partially dried out. It is then processed for twenty-four hours in heated vats with a rolling agitator, known as conges.

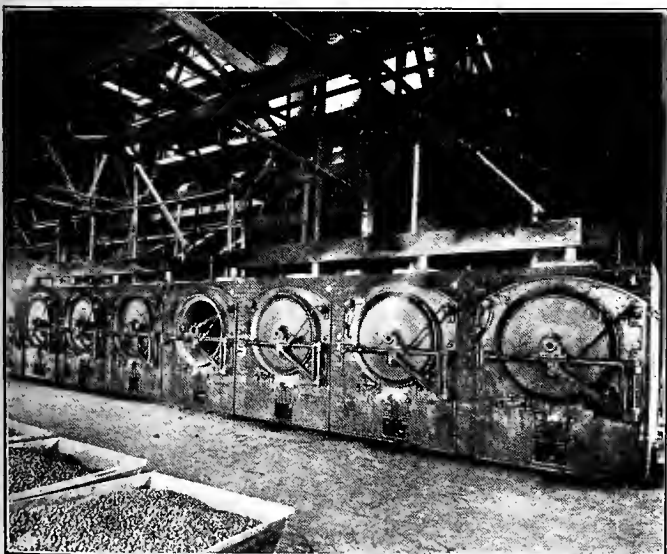
Still kept at a certain temperature, it is put into tin moulds of various shapes, the moulds being laid out on a shaking table which shakes the chocolate down thoroughly. The filled moulds pass on a conveyor into the refrigerator, emerging at the other side after about thirty minutes in the many familiar forms of eating chocolate.

The milk used in the manufacture is condensed on the premises in special vats under a vacuum. About 1800 gallons of fresh milk are used daily. Of the other raw materials, the sugar and nuts are

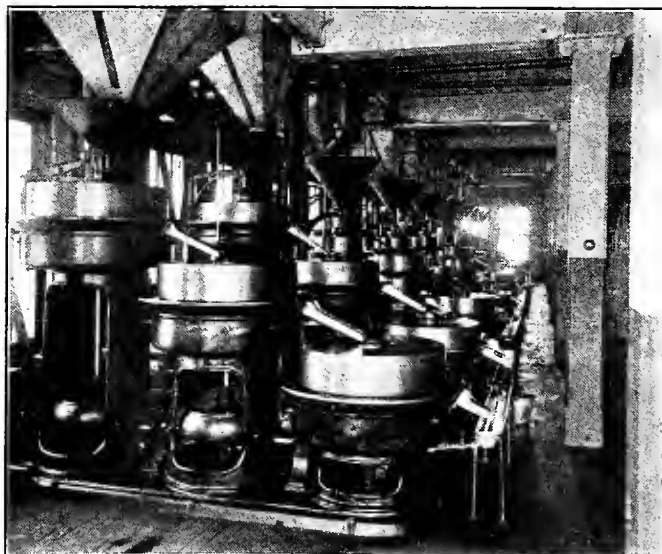


The safety switchboard is one of the more recent of the electrical improvements. The wiring in the plant was put in conduit at the same time.

both obtained in California, and the fact that California is the second largest sugar producing state in the Union is a distinct advantage to the western chocolate manufacturer. The sugar consumption in the Ghirardelli plant amounts to an average of 25,000 lb. daily, obtained mainly from the Salinas valley. The cocoa beans come from South America, principally Ecuador, and as San Francisco is the nearest port of call on the coastwise route, the western manufacturer is in a distinctly favorable position. The climate is one other factor which must be numbered among the West's advantages for this particular industry. Although the chocolate during its manufacture is kept steadily at a rather high temperature, regulated by means of thermostats, directly it has passed through the refrigerator and is ready for wrapping and packing, coolness is essential. Hot weather sweats the cakes and makes it impossible to wrap them; consequently it is frequently necessary for the eastern manufacturer to shut down during the summer months. In the West this loss of time and profit is not included in the plant's operating program, the working conditions being ideal throughout the year.



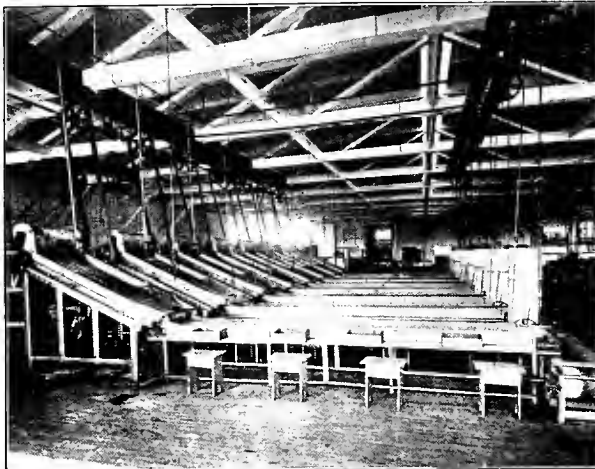
The roasters are oil heated, with electrically operated revolving elements belt driven by a single motor. The beans are blended before being roasted.



The steel and stone mills where the cocoa beans are crushed preparatory to having part of the cocoa butter extracted.

Mechanical Handling of Food During Manufacture

One of a Pictorial Series Featuring Interesting Applications of Electric Service, Advances in Home, Industrial and Power Construction and Noteworthy Developments in Western Progress



Sorting machines in a dehydrating plant. The fruit is automatically sorted according to sizes and passed along to a belt conveyor. The whole electrical mechanism in the process is controlled by one man.



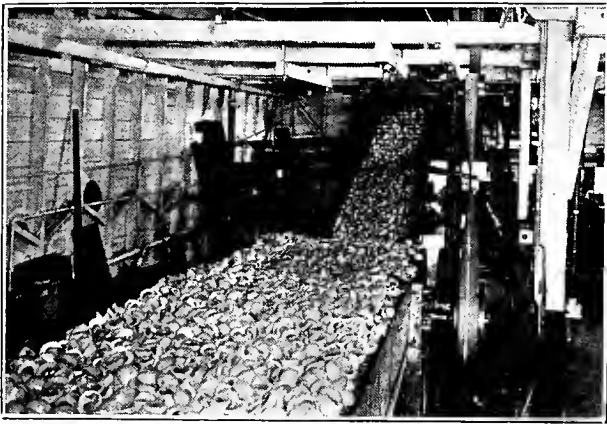
The electrically operated receiving station at the packing house of the Honora Realty Company, California. From the time the fruit is put on to this conveyor until it is packed, no hand touches it.



Preparing tomatoes for canning. Note the electrically operated conveyor which passes the pans before the workers. The canneries are among the most important users of electricity in the West, the number of motors in an average plant being about 25, and the power consumption about 90,343 kw-hr. annually. All the large canneries are completely electrified.



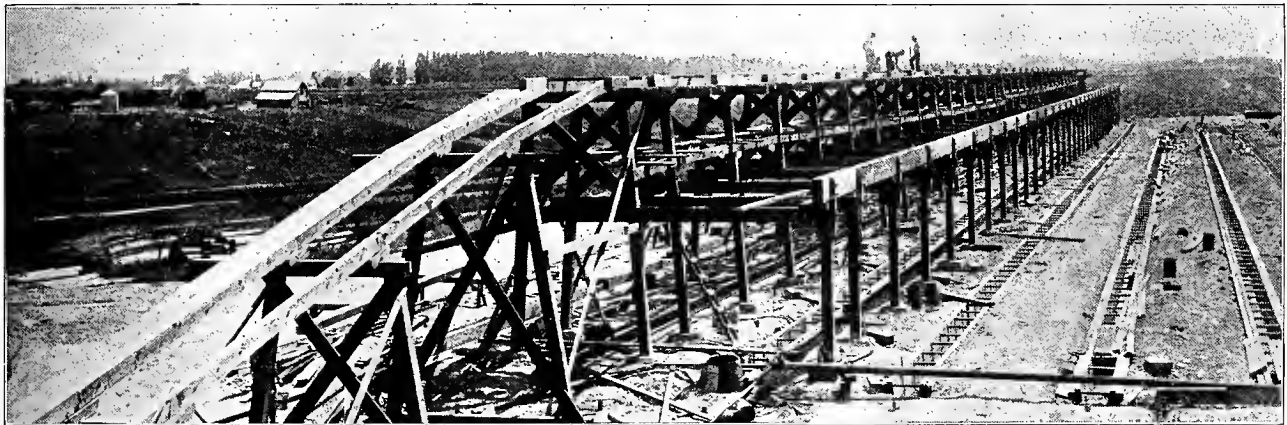
Long belt conveyors carry the boxes of fruit in this raisin packing plant from one end of the packing room to the other. Besides the great conveniences and cleanliness involved in electrical handling of a food product, packers and canners have found that operating conditions are greatly improved by the flexibility that the individual drive makes possible.



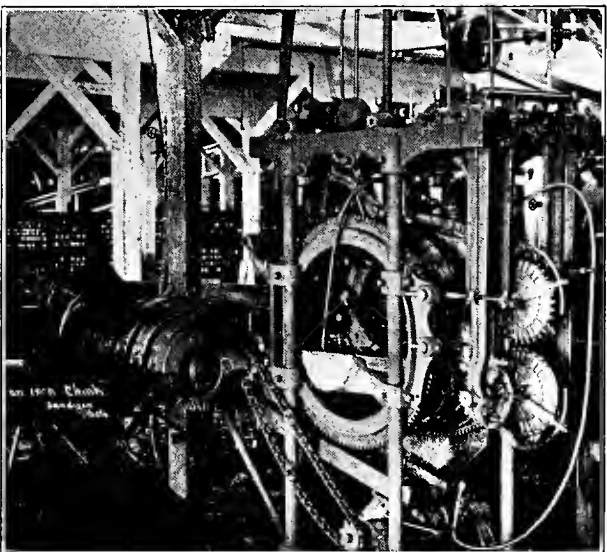
The electrically operated washing machine at the dehydrating plant in Atascadero, California, is only one of the many devices installed to eliminate human handling of the fruit, insuring perfect cleanliness.



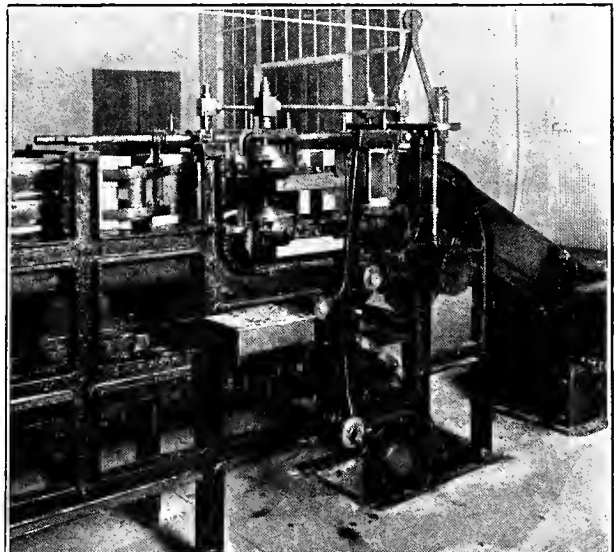
The Fresno plant of the California Associated Raisin Company uses electrically operated belt conveyors to transfer cartons from the packing tables to the floor below, where they are nailed up ready for shipment.



Beets used in the sugar beet industry of the Intermountain district are carried on this conveyor from the pits where they are dumped by the wagon, to a revolving screen. On the screen they are shaken free of dirt, dropped down a chute and carried on an elevated belt over the sheds to the bins which are to be filled.



"The Iron Chink," a machine used in the cannery of the Pacific American Fisheries at Bellingham, Wash., obviates the necessity for a tremendous amount of handling of the product. Formerly the salmon were butchered by Chinamen, but the machine performs the operation at the rate of sixty a minute, cutting off the heads, tails and fins, and removing the entrails.



In the Shredded Wheat Factory at Oakland, California, the most efficient and sanitary methods are employed both in handling the grain used in the cereal, and in packing the finished product. The wheat is cleaned in electrically driven machines and conveyed from one process to the next by special elevators terminating at the sealing machine shown in the picture.

Bread and Butter Business for the Active Electrical Dealer

Two Practical Suggestions Which Will Help to Pay Overhead, Reduce Cost of Making Sales and Increase Profits Through Taking Advantage of the Small Convenience

BY M. T. DOLMAN

Manager Sales Promotion Bureau, Pacific States Electric Company

I have been asked by contractor-dealers many times:

How can I increase my sales?

How can I reduce the cost of making a sale?

How can I increase my turn-over and lower my overhead?

My answer has always been:

Pay more attention to your bread and butter business.

By bread and butter business I mean the "little things" with which every electrical store is filled, or should be, and for which there is an unrecognized and unappreciated demand on the part of the public.

The Possibilities of the Front Door Bell

For fear of reducing the amount of battery business, for instance, dealers are sometimes loath to introduce bell-ringing transformers, not realizing that through their sale satisfied customers are made and good-will built up for both the dealer and for other electrical products.

Bell-ringing transformers, as manufactured today, are well-nigh trouble proof. Once installed, battery troubles for door bells are abandoned for all time. And the transformer will scarcely turn the meter, so operating cost is absolutely unnoticeable.

I don't know of any one thing manufactured today which will go so far toward selling the public on the idea of the practical and economical use of electric power as this one little article. Common sense should tell you that the real service it performs instills a confidence in the dealer which cannot be shaken and which means a ready acceptance of his statement that other electrical merchandise he recommends is worth while.

If I were a contractor-dealer I would dress a window with bell-ringing transformers at least once every five weeks, being careful to fully explain, on cards, its service features. I would keep a permanent counter display near my cash register. I would block out into districts the community which I was endeavoring to serve and systematically circularize those districts. I would make it obligatory for my salesmen and clerks to call this article to the attention of every customer who called at the store during the time I had the window dressed.

You people who have always wondered how the chain store has been able to grow to such proportions will here find your answer. "Concentrated salesmanship"—that's the answer. Making two sales grow where one grew before.

Saving a Fire and a Customer

Now another little article which is, to my way of thinking, one of the most useful, yet one of the least

talked-of (by the dealer)—the cut-off switch which can be applied to the cord of any electrical appliance. Two such switches have trade names: one is the G-E Thru-Cord Switch, the other the 70-50 (Cutler-Hammer) switch.

Let's see how they come in to help reduce overhead, to increase turn-over, to say nothing of adding to net profits.

A woman calls at your store for the best known of all appliances—the electric iron. She wants a six-pound iron for use in her home. Perhaps she is going to have to use it from an overhead lamp socket. The chances are she does, for dealers haven't yet learned that to insure a future sale of heating appliances of all kinds and types they must first wire houses properly, equipping them with convenient receptacles.

Now, as a human being, not as an electrical contractor-dealer, you know that most people, not only women, are forgetful and neglectful, and that your customer is very apt, at some time or other, to run to answer a door bell or the telephone, and forget all about her iron; not so much forget about, perhaps, as neglect it because to detach it in a hurry is inconvenient. All sorts of things are apt to happen as a result. Proper explanation of the service such a cut-off switch will perform makes two sales grow where one grew before, gives the dealer two profits, speeds up turn-over and reduces overhead. That's why the drug store clerk today always asks if you have tooth paste when you buy a tooth brush, or asks if you need razor blades when you ask for shaving soap. That's using your heaven-given horse sense. That's all.

Following Up the Sale

Now don't stop with that. The sale is going to lead to future business, if you follow it up carefully. It's certainly going to lead to a satisfied customer. And when you have other women call in and ask you about the selfsame thing, make it a point to thank the first customer next time you see her. She'll do a lot of talking about the service you gave her and it's the very best kind of advertising you can get, for it's also good-will.

The trouble with most electrical contractor-dealers is that they are spending most of their efforts trying to sell washing machines, mangles, ranges and dish washing machines and are overlooking the little things that lead to the easy sale of those larger articles.

Incidentally, common sense should cause dealers to realize that it is the steady sale of these "little" electrical servants which pays running expenses.

Increasing Mill and Factory Production

Short Cuts and New Power Applications That Have Reduced the Cost of Manufacturing Processes or Increased the Rate of Production Together With Practical Methods That Have Been Devised to Cut Total Production Costs. Ideas and Suggestions by Practical Men

THIS DEPARTMENT will be devoted to a discussion of practical problems of factory operation and management. Readers' requests for information will be published in each issue, together with the answers to previous questions. It is hoped that readers will take full advantage of this opportunity to profit by the practical experience of others and to give others the benefit of their own discoveries. Space rates will be paid for answers which are published.

INFORMATION REQUESTED

Power Factor Rates in California —

Is there such a thing as a power factor rate in California? Just how does this operate? Under what conditions might advantage be taken of it? E. D. C.

Prevention of Headlight Breakage in Mines —

Has any protective device been worked out to guard against danger from headlight breakage on electric trucks used in mines? W. E. S.

Dependence on Single Transformer —

We have a small plant where continuity of service is absolutely essential. We plan to install one three-phase transformer in place of three single phase transformers. Is it inadvisable to depend on the single three-phase unit? K. B. T.

Advantages in Synchronous Motors —

I understand that it is advantageous to the power companies to have numerous motors of 50 hp. and over of the synchronous type on their lines. Is there any advantage to the user in the employment of such a motor? W. C.

Avoiding the Pole Fires —

We have been troubled with grass fires which endanger the poles on the extension line on our property. The power companies must have had to face the same problem. What inexpensive safeguard can be used? E. R. M.

Keeping Reflectors Clean —

We find some difficulty from the rapid dusting up of reflectors due to unavoidable dust conditions in our plant. Are there any special methods for remedying this situation? J. H.

PROTECTING MACHINERY FROM STRAY BITS OF IRON

Crushing and grinding machinery in industrial plants often suffers damage due to tramp iron. In the same way, iron particles, nails and other material which might prove injurious to cattle, often find their way into feed which is being prepared for the market.

The California Associated Raisin Company has solved the difficulty arising from this source by the use of a magnetic pulley. The raisins as they arrive from the vineyard in the so-called "sweat boxes" are not always carefully shipped and sometimes contain nails and other metal materials which would injure the seeding machinery. A magnetic pulley has therefore been installed between two buildings

of the Fresno plant which catches all such waste and discards it while the raisins are in transit to the seeders and packers.

Pulleys used for this purpose may be of the greatest simplicity, consisting of a series of steel clad electric magnets mounted on a steel shaft, with much the appearance of an ordinary pulley. Cur-

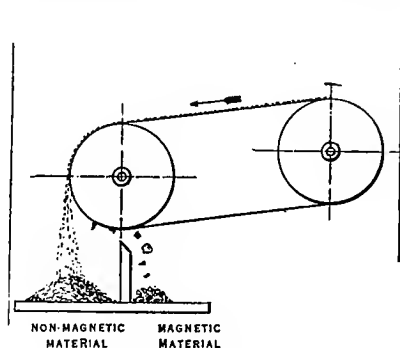


Diagram illustrating operation of magnetic pulley

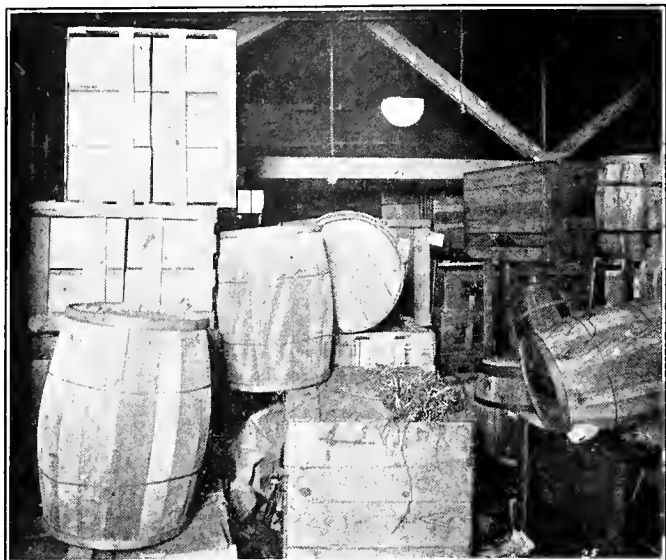
rent is carried through a pair of collector rings on the end of the shaft which is drilled to receive the wires leading to the magnets.

The principle of operation of the separator is shown by the accompanying cut. The material to be separated is fed upon a belt conveyor passing over the separator. The non-magnetic material falls by gravity from the brow of the separator vertically into a suitable receptacle or to a conveyor, while the iron or magnetic materials are held firmly against the belt until carried to a point where the belt leaves the separator on the under side, and it then drops by gravity to a separate receptacle. Thus the magnetic materials are separated from the non-magnetic materials.

WASTAGE THROUGH BARREL STORAGE OF GLASSWARE

Most manufacturing plants and industrial establishments must figure on the storage of materials, both those intended for use in the maintenance of the plant and in the finished output of the works, whatever this may be. Among the contents of the storeroom may usually be reckoned glassware of some description, whether spare lighting equipment, special parts or other material. It is surprising how often this is stored and transported from place to place packed in the good old fashioned barrel, cushioned with excelsior.

In this connection the experience of the electrical manufacturers in the handling of lighting



Photograph of the typical material storeroom, showing the precarious position in which the barrel too often is found. Glassware packed and stored in this way has about fifty per cent less chance of survival than that packed individually in cartons.

equipment should be of value. Several experiments were conducted and careful records kept over a period of time, with the result that it was found that glassware suffered inexcusable fatalities under barrel storage. The barrel does not stack well, it requires two men to handle it, as a rule, it rolls with tempting ease—and in consequence it is subject to knocks which are never offered the lighter and more convenient container. In storage it is seldom securely placed—and when required again, invites the same rough treatment which it received during the transportation.

In consequence of these investigations, the manufacturers of illuminating equipment have uniformly adopted the paper carton as the safest method of packing material for shipment and of storing it after its arrival. Fully fifty per cent of the former losses were saved in this way. The principle is one which has obvious applications in other fields and might well be employed in the storeroom of the industrial plant.

IMPROVING LUBRICATION AND OIL PURIFICATION

The recent report of the Prime Movers Committee of the National Electric Light Association has many outstanding comments of great timely interest to those interested in more efficient power production in industry. Particularly interesting to western industry are excerpts from the report which deals with better lubrication. Quoting one or two excerpts from this report, we append a brief of one of the efficient lubricating systems described, as follows:

Continuous By-Pass System

The oil from the bearings returns after purification to the oil reservoir in the base of the unit where a vented sight overflow is provided, allowing a certain amount of oil to run continuously by gravity into a filter.

The clean oil is pumped back into the reservoir to resume its cycle of duties. Diagram of this system is here shown.

Given the proper oil and a clean circulating system, there should be no appreciable deterioration of the oil even after years of continuous service. Emulsion is caused by water and air accumulating in the oiling system. By continuously removing water and air, there is little opportunity for emulsion or the formation of sludge in a continuous by-pass system. The circulation of the oil is so rapid and purification of the whole charge so frequent that there should be no appreciable amount of sludge or much deposit in the turbine oil reservoir, in the piping or in the oil cooler coils. Therefore, frequent cleaning of the coils is unnecessary and their heat conductivity is unimpaired.

Organic acid increases at an accelerating rate once a small amount has accumulated. Analyses of oils which have been in constant use for years and purified by the continuous by-pass system indicate less than 1% acidity, and only a trace of moisture. It would seem that the acid is entrapped in the impurities and the continuous removal of them keeps down the total of acid content.

By continuously removing the agencies that cause impurities, emulsion, sludge, acidity, etc., it cannot be said how long a charge of oil may remain in service before, if ever, it becomes unfit for use. It is reported that new turbines equipped with this system have been in operation for periods up to 21½ years, with small quantities of make-up oil added,

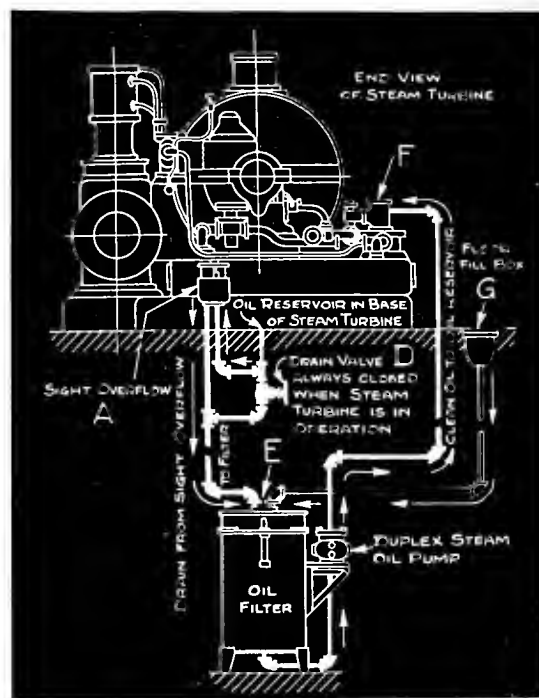


Diagram of connections for the continuous by-pass system of oil purification

and analyses made at the end of such periods show the oil to have the same lubricating value as when new, and to have an acid content of considerably less than 1%. This shows the importance of providing such a system when the turbine is installed.

Study Course

A University Accounting Course for the Contractor-Dealer and the Business Men in the Small Industrial Plant

BY PAUL B. KELLY

XI—THE PRACTICAL OPERATION OF THE STANDARD ACCOUNTING SYSTEM — OPENING THE LEDGER

You have several times been advised to immediately install and use the forms described in the first section of this course entitled "Gathering the Preliminary Data." Before the General Ledger is opened in the manner that will be described in this lesson, these forms should be in use. The Accounts Receivable Ledger and the Customers' Bill File should be in operation as described in Lesson 2. Likewise, the Accounts Payable Ledger and the Voucher File should be operating in the manner outlined in Lesson 4. The Job Envelope system should be in use. Of course, the Check Book should be so maintained that the actual cash balance may be obtained at any moment.

Indexing the Ledger

In opening the ledger, the first thing to do is to write a complete index to the accounts in the front of the book. Until you unconsciously memorize the ledger page numbers, it will be necessary for you to refer to this index every time that you post a journal entry. A complex index to the ledger was given you in the last lesson. The only thing that you have to do is to copy it into the ledger on the pages provided for it.

Heading the Account Pages

The next step for you to perform is to turn to each page indicated by the index and to write the name of the proper account on that page. As was explained in Lesson 10, this index is so devised that it will place the accounts in the ledger in the most convenient sequence and at the same time will allot to each the right number of pages.

Taking the Original Inventories

In starting a system of accounts, you will remember, we must begin with the accounting equation in balance and in harmony with the true state of affairs. Unless a double-entry set of accounts is already in operation, the only way to secure the data necessary to make the first entry to the ledger is by means of inventories. We must find the value of each asset and the total value of all assets. Similarly, we must ascertain the amount of each kind of liability and the total of all liabilities. The Net Worth balance is obtained by taking the difference between Total Assets and Total Liabilities. The first entry to the ledger must reflect the financial position of the concern at the moment at which the books are opened. Such a financial statement is a Balance

Sheet. Therefore, in order to get the data that is necessary to open the ledger we must set about to establish a balance sheet by means of inventories which will show the true financial position of the concern at the date when the ledger is opened. The balance sheet must be so compiled that it will present a true statement of all the assets and liabilities at the particular moment.

Fixed Investment Inventories

Real Estate —

The asset listed first in the balance sheet is Real Estate. Make up a list of all real estate owned by the business. The term Real Estate includes all land and buildings. List the items of real estate at their cost price to you. List the cost of the land and the cost of the buildings separately. If necessary, estimate the portion of the cost price attributable to land and the portion attributable to buildings. Show the date that you acquired each item. Show the estimated life of each building at the time that you acquired it. Calculate the annual depreciation charge on each building. You obtain this charge by dividing the cost price of the building by its estimated future life when you acquired it.

Next, show the number of years that have elapsed since each building was acquired. Then list the total depreciation accrued on the building to the date of the balance sheet. You obtain this figure by multiplying the annual depreciation charge by the number of years that have elapsed since the acquirement. The schedule of real estate should appear about as follows:

INVENTORY OF REAL ESTATE Jan. 1, 1921.							
Item	Location	Cost	Est. Life	Dep. Chg.	Time Elapsed	Dep'n Acc'd	Pres. Value
1 Lot	426 Shattuck	3000					3000
1 store Bldg	" "	3000	20Yr	150	5 1/2	825	2175
1 Lot	2052 5th St.	1000					1000
1 House	" " "	3000	15Yr	200	3 1/4	650	2350
Totals		10000		350		1475	8525

You now list the totals in your balance sheet as follows:

BALANCE SHEET Jan. 1, 1921.		
Real Estate	10000	Res. Dep. on Real Estate 1475

The difference between the cost price, which is shown on the left side of the balance sheet, and the Reserve for Depreciation on Real Estate, which is shown on the right side, represents the present value of the real estate to the going concern. The truth of this statement is not altered by the fact that the owner could sell the real estate for a higher price

than he paid for it. Until such a sale is made, this asset, like every other asset, must be shown at cost less depreciation accrued.

Furniture & Office Appliances
Automobiles
Tools

Schedules exactly similar to the one drawn up for Real Estate should next be prepared for these three kinds of assets. The figures obtained should be entered in the balance sheet.

Cash Guaranties —

Sums of cash deposited as guaranties that the requirements of local city ordinances will be complied with are listed under this heading. A list of such cash guaranties can be quickly made and the total should be entered in the balance sheet.

Investments —

This account includes all stocks, bonds, and mortgages of other companies acquired for investment or any other purpose. These items should be listed at cost.

The balance sheet in so far as you have completed it will appear about like this:

BALANCE SHEET Jan. 1, 1921.			
FIXED INVESTMENTS			
Real Estate	10,000		
Furn. & Off. Appl.	700	WORKING RESERVES	
Automobiles	1,800	Res.-Dep. on Real Estate	1,475
Tools	300	Res.-Dep. on Furn. & Off. Ap.	370
Cash Guaranties	125	Res.-Dep. on Autos	750
Investments	500	Res.-Dep. on Tools	150

Current Asset Inventories

Merchandise —

Next, it will be necessary for you to inventory the stock of merchandise. Value this at cost prices. Go through all your stock and make a list of what you have on hand. Cost this list and make all calculations after you complete actual counting. It is best to take this inventory on Sunday or some holiday so that you will not have to make adjustments because of sales made during the day.

This account, also, includes the cost value of the merchandise which has been taken out on unfinished jobs. The amount of material on unfinished jobs may be secured by making a list of the totals shown in the "Material" column on the Job Envelopes in the "Unfinished" file.

A certain percentage of this stock will become worthless through obsolescence. Make a Reserve for Depreciation on Merchandise equal to the cost of the portion of the merchandise inventory that will probably become worthless due to this cause. Estimate this loss liberally. It pays to be conservative. We will assume that as a result of the inventory you enter the following items to the balance sheet:

BALANCE SHEET Jan. 1, 1921.		
Merchandise	6,000	Res.-Dep. on Merchandise 200

Direct Job Expense Unbilled —

This account represents the amount of direct job expenses that have been incurred on Unfinished Jobs. Such expenses are eventually billed to the customer just like the material. In the meanwhile they represent an asset and must be shown as such. The

total amount of Direct Job Expense Unbilled is obtained by adding the amounts shown on the Job Envelopes in the "Direct Job Expense" column.

Labor in Progress —

In a similar manner take an inventory of the cost value of Labor in Progress. Labor in Progress includes the value at cost of the unbilled labor expended on unfinished jobs. You can quickly secure the amount of Labor in Progress by taking the total of labor shown on the Job Envelopes in the "Labor" column. Of course, it is manifestly necessary that the Job Envelopes should have everything posted to them up to date, when these totals are drawn off.

Notes Receivable —

Under this heading list all notes receivable on hand showing the names, dates, and amounts. Many contractor-dealers will have no use for this account.

Accounts Receivable —

The total value of accounts receivable is easily obtained if the Accounts Receivable Ledger has been kept in the manner described in Lesson 2. All that it is necessary to do is to list the balances shown in the various customers' accounts and to secure a total. Be absolutely certain that this list of balances and the footings are correct. Enter the total in the balance sheet.

Trade Acceptances Receivable —

The total face amounts of all trade acceptances held by the contractor-dealer should be placed in the balance sheet under this heading. Trade Acceptances Receivable are drafts in the possession of the contractor-dealer that have been drawn on some person in settlement of a trade debt and which have been consented to, or, "accepted" by that person. Few dealers will have occasion to use this account.

Cash —

The inventory of cash can be quickly obtained by adding to the balance shown in the check book, any cash received and not yet deposited in the bank.

Petty Cash & Cash in the Drawer —

It is customary to keep a certain amount of cash for change-making purposes in the cash drawer. Also, it is customary to set aside a certain amount of cash in what is known as a Petty Cash Fund. The operation and the purpose of setting aside these sums of cash is explained in Lessons 3 and 4. These sums of cash are distinct from the bank cash. They are combined in one account for convenience and are listed in the balance sheet under the above title.

Money in Escrow —

Money in escrow is money belonging to the contractor-dealer which he has delivered to a trustee to be paid by the trustee to a third party upon the performance of some condition. The condition, for example, might consist of the transfer by deed of property owned by the third party to the contractor-dealer. Few contractor-dealers will find use for this account. However, if money in escrow exists, list it in the balance sheet under this title.

Cash Advances —

The term Cash Advances is used to cover all temporary or permanent advances of cash to employes on account of traveling or other expenses, when such advances are to be accounted for at a future date. It also includes certified checks deposited with bids. Some contractor-dealers may find no use for this account.

Deferred Assets

The nature of Deferred Assets was explained in Lesson 7.

Insurance Premium Advances —

Make up a list of the unexpired insurance policies showing the data as in the following schedule:

INSURANCE PREMIUM ADVANCES			
# 6059306 London Assur. Co.		#6059306 Lon. Assur. Co.	
\$2000 on Mdee Rate \$1.00		Expired to date (1/2)	10.00
From 7-1-20 to 7-1-21	20.00		
# 6430546 London Assur. Co.		#6430546 Lon. Assur. Co.	
\$3000 on Mdee Rate \$1.00		Expired to date (1/4)	7.50
From 10-1-20 to 10-1-21	30.00	To Balance	22.50
	50.00		50.00
Unexpired. Ins. Premiums	52.50		

Enter the total of unexpired insurance premiums in the balance sheet under the heading "Insurance Premium Advances."

Taxes Paid in Advance —

Make up a similar schedule of the taxes that have been paid in advance. Show the date and the total paid on the left side. On the right side, show the portion expired at the date of the balance sheet. The difference between the two sides represents the Taxes Paid in Advance and should be shown in the balance sheet under this title.

Deferred Charges to Income —

List under this title any other Deferred Charges of importance. A large stock of stationery, for example, should be listed under this heading.

If other assets exist, they should be inventoried and entered in the balance sheet in the proper section under an appropriate title.

Fixed Liabilities

Most contractor-dealers have no fixed liabilities. However, if fixed liabilities such as mortgages or long term notes payable do exist, enter them in the balance sheet in this section under the proper title.

Current Liabilities

Notes and Acceptances Payable —

Make up a list of the notes payable issued to banks or to business houses. Show in this list the date issued, the date due, and the amount of each note. Secure total and enter in the balance sheet.

Acceptances Payable are drafts drawn against the dealer by other persons which the dealer has obligated himself to pay when due. If the dealer has such liabilities, he should prepare a list similar to that of Notes Payable and should list the total in the balance sheet.

Accounts Payable —

The total of accounts payable is easily obtained by drawing off a list of the balances shown in the Accounts Payable Ledger. Be certain that the list and the footings are absolutely correct before entering this item in the balance sheet.

Taxes Accrued —

If taxes are paid for past periods instead of in advance, at any date, a tax liability for a part of the estimated taxes for the current year exists which is proportionate to the time that has elapsed since the beginning of the tax year. Make up a list of such tax accruals, if there are any, and enter the total in the balance sheet.

Other Current Liabilities —

If any other kinds of current liabilities exist, inventory them and list them in the balance sheet.

Net Worth

The inventory of assets and liabilities is now completed. The Net Worth figure is obtained by taking the difference between them.

Total Assets	32,000
Less Working Reserves.....	2,000
	<hr/>
Present value of Assets.....	30,000
Less Liabilities	15,000
	<hr/>
Net Worth	15,000

The Net Worth figure is shown in the balance sheet under the proper title. What the proper title for the Net Worth balance is depends upon the type of business ownership as discussed in Lesson 7.

Opening the Ledger Accounts

This balance sheet must be entered into the ledger in order to create the original accounting equation. The first Journal Entry is merely a copy of this balance sheet made on page 1 of the journal. From the journal, all these figures are posted to the proper accounts in the ledger. The ledger pages are noted in the folio columns to indicate that the items in this journal entry have been posted.

In posting these inventories, it is advisable to enter in the ledger much of the information shown in the detailed schedules that were made in the process of inventorying. The extent to which this detail should be shown in the ledger is a matter in which judgment must be exercised. The details of such inventories as Merchandise, Direct Job Expense, Labor in Progress, Accounts Receivable, and Accounts Payable should not be entered in the ledger. Most of the details of the other items in the balance sheet should be entered in the ledger for a permanent record of this information is necessary.

The first balance sheet should also be recorded in the "Statements" or "Trial Balance Book" for comparative purposes. The record in the Trial Balance Book of the first balance sheet should be drawn directly from the ledger. It is thus a trial balance of the ledger after the first journal entry has been posted. It is essential that the first entry to the ledger be correct, and the books started in balance.

Future Work

The ledger is now in operation. It contains a picture of the financial position of the business at one particular date—the date of the balance sheet. This picture remains true only for a moment. Every business transaction alters it. These transactions must be reflected in the ledger and in subsequent balance sheets.

Western Dealer, Jobber and Agent

Business building suggestions for the store—
Distribution and warehousing methods—
Advertising and sales promotion ideas

EFFECTIVE WINDOW MERCHANDISING

BY R. E. CHATFIELD

Executive Secretary, British Columbia Electrical Development Association

Four distinct steps are necessary to make a sale. First, the attention of the prospective customer must be attracted—second, attention must be converted into interest—thirdly, interest developed into a desire to possess and the final step of developing desire to possess into decision to buy.

The New State Electric Supply and Fixture Company of 214 East Washington Street, Phoenix, Arizona, recently overcame the first two steps in the consummation of a sale by a very clever window display of electric fans. Fans of every size filled the window, the brass blades making a yellow background against which a sixteen inch fan in motion stood out prominently.

The thermometer registered 120 degrees in the shade and on the blazing street there was no shade but from the darkened interior of the store a current of cool air was forced out on to the street by three large fans. Such a marked difference in the temperature naturally attracted the passerby who paused to look into the window at the merchandise displayed. The cool breeze coming thru the open door momentarily aroused attention into interest and the average passerby who paused stepped into the store to inquire price, cost of up-keep and so on, gave the salesman an opportunity to clinch the sale.

The effective window display half made the sale for the firm before the prospective customer entered the store. Effective merchandising can be promoted by effective window displays of this type and the contractor-dealer will find more attention paid to window displays will bring more merchandise.

HOW, WHEN AND WHERE TO SELL CONVENIENCE OUTLETS

BY WALTER F. PRICE

Electrical Equipment Expert, California Electrical Cooperative Campaign.

Do you know that a very large majority of homes are built by home builders without the supervision of an architect?

Do you know that these builders either draw their own plans or buy them from architects, merely as a guide for the general arrangement of the house?

Do you know that they seldom work from written specifications?

Did you ever see a whole block of new houses, each one apparently different from the other, then go through them and find that the floor plans are all just alike, built from one set of prints, with the front elevation changed on each to distinguish them?

These are some of the conditions that I have seen and know exist in California.

This type of home builder never gives the electrical wiring much thought until the framework is up, because he isn't just sure how it's going to look himself until that time. Then he sends for the electrician, and he invariably picks out the small electrical contractor because he has no office and will come out to the job and submit his bid.

Right then is the time to sell the builder more convenience outlets. That is the "critical moment." Soon the laths will be on and it's too late.

One of the most successful electrical homes exhibited in California was designed by an architect and turned over to the builder without specifications and with no electrical outlets shown on the plans. The builder decided the front porch and entrance should be on the sunny side so it was necessary to turn the blueprints upside down to make them fit the lot where he wanted to build it. As usual the electrician was called in after the frame was up and told to wire it just the same as the last job. When I happened along the wireman was pondering over the plans, turned upside down, trying to figure out where several partitions had been changed.

And yet the thousands of people that went through this electrical home do not know these facts.

Then it's up to the electrical contractor and his wireman to do the selling.

The field secretary from the Campaign cannot be in every new house at that "critical moment."

Just point out to the builder where these convenience outlets should be, show him one of the California Electrical Cooperative Campaign's little wiring plans, make him admit that he likes all of these electrical conveniences in his own home, and then ask him if he thinks he is treating his clients right by not providing the necessary convenience outlets for their appliances. Ask him how he expects to advertise "Modern Homes For Sale" if they are not equipped with a reasonable number of convenience outlets in each room. Compare the total cost of the wiring with the modern bathroom that he is building and just see if he doesn't look sheepish and tell you to go ahead and put in more outlets.

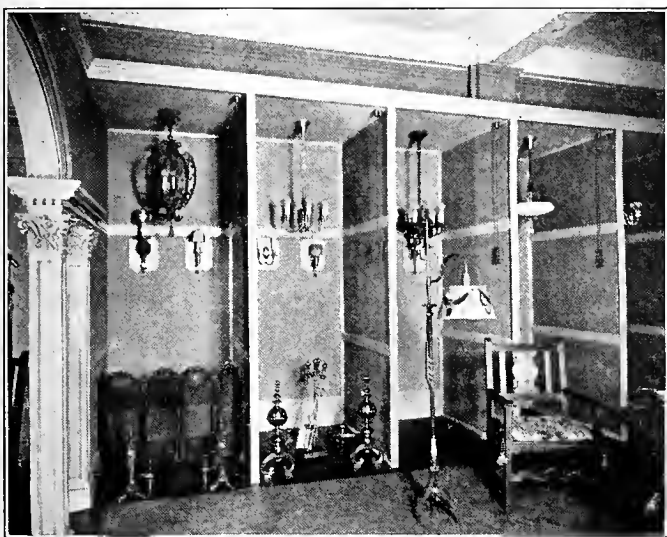
Of course, this must be supplemented by the exhibition of modern electrical homes and various forms of convenience outlet advertising so as to always keep the "secret of electrical convenience" in the minds of the people, and particularly the prospective home buyer, who will follow up your arguments by demanding more convenience outlets when they buy new homes.



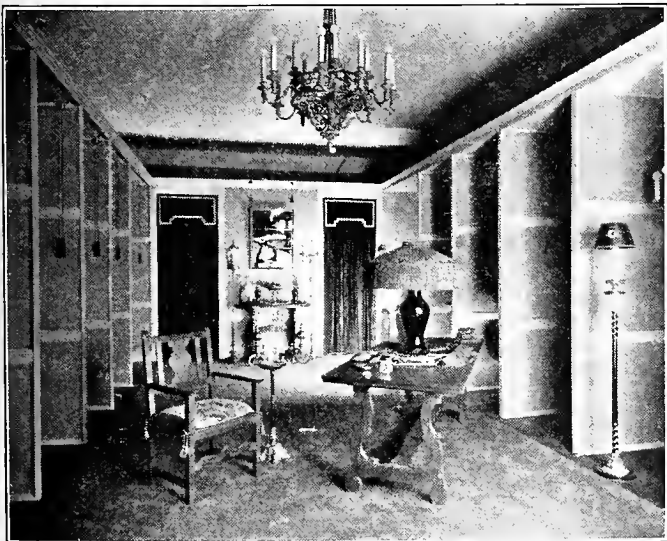
The whole interior of the store looks like a home drawing room.



A shadow booth and an easel background for displaying individual fixtures



Special booths are provided for the display of hanging fixtures.



There is no crowding and yet there seems to be a sample of everything.

A NEW SYSTEM FOR SELLING LIGHTING FIXTURES

Upstairs Store, Planned as Living Room
Has Effective Arrangements for
Assisting Customers

A salesman for a lighting fixture house once found that it was easier to sell a customer a fixture if there was only one instead of a hundred to look at. In the old store there was a veritable mass of fixtures of all sorts suspended from the ceiling, and while the customer might want only a twenty-dollar fixture, when it was hanging alongside one that sold for one hundred dollars it looked miserable, and having made up his mind not to spend over twenty dollars the customer decided that there was nothing in the shop that appealed. This salesman found that when a customer came in after a fixture and was at once escorted to a back room, comfortably fitted up without any fixtures in it and a twenty-dollar fixture was brought in, or several fixtures of the same approximate price, the customer had little difficulty in making a selection.

Taking this idea as a basis, William T. Boyd proceeded to find a suitable loft in an office building. The place he selected was just over the office of one of the leading real estate firms of San Francisco who deal in high class residences. This loft he fitted up into a very comfortable living room and arranged the booths along the sides of the wall, each booth containing a separate lighting fixture controlled by a push button at the side of the booth. These fixtures, however, served only as types, as a great deal of the work done is of special design. In the back room are ranged the small fixtures, one of them being set in a shadow box arrangement so as to show it alone when it is lit and the rest of the room in darkness. Also, there are several different types of wall fixtures mounted on panels of different colors which are supported by an easel, this idea giving the prospective buyer an idea of what the fixture looks like on different colored backgrounds.

In speaking of his idea, Mr. Boyd stated that most of the fixture sales that amounted to anything were not obtained from people passing by on the street and for that reason a ground location was not necessary. Most of the business must be gone after and solicited. In answer to the question as to whether or not considerable bread-and-butter business was lost by not selling small fixtures, lamps, etc., Mr. Boyd contends that not having to carry a large stock of material considerably cuts down expenses and offsets such minor sales. A store of this type is only after the high grade trade and does not care to figure on cheap fixtures such as are installed in the houses that are built on the wholesale plan.

GETTING READY TO SELL OUT

BY CARL K. CHAPIN

Are you ready to sell out? Could you sell if you wanted to? The question is one for all of us to ponder over, whether we contemplate such a step or not.

If a man is going to buy you out,—lock, stock and barrel, as the saying is, you would be so busy getting ready to put your best side uppermost, you would hardly have time to eat. The harder and colder a buyer you thought him to be, the more judgment you would use in arranging to display your goods to advantage.

Don't you know that Mr. Will B. Sold is about the hardest customer in the world just now, to sell anything to? And he isn't even related to Mr. E. Z. Sold you have had so much business with heretofore.

Go over your old stock that cost you good money—clean it up, relaqueur or paint where necessary, or have parts renickeled, and it will bring three or four times junk value, but if you let it continue to kick around, someone will carry it home because it's not much good any longer, or else it will be junked sure enough to make room for something that you must buy new.

Begin at your front door and ask yourself the question, "would I buy this store if I were looking for one?" It's ten to one you wouldn't. Now if you can spend a few days taking summer inventory of yourself and your establishment, you will be so busy making sales in two weeks that you will forget all about the dirty job it was to get ready to sell out, and you will be ordering new, up-to-the-minute stock for the fall and winter trade. Sell yourself your own store first.

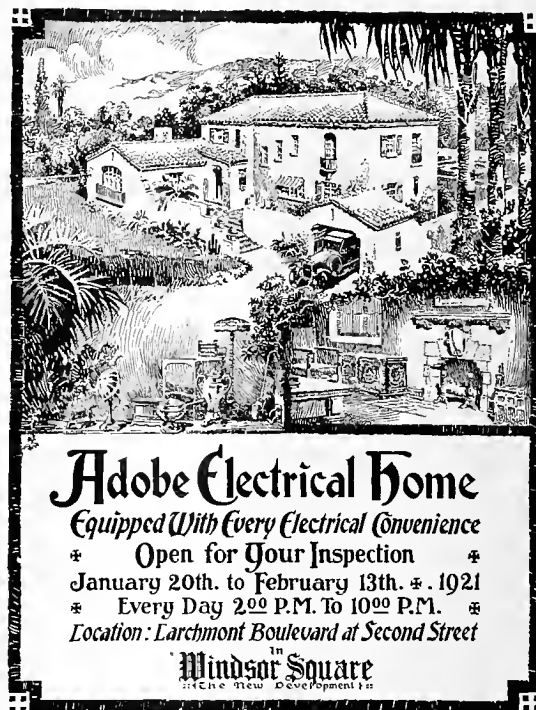
MOTOR WINDING CHARTS AN ASSISTANCE IN HANDLING REPAIR WORK

In handling a piece of repair work of which the electrical contractor-dealer is not familiar with the previous history, it sometimes develops that the source of the trouble is an incorrect repair which has been performed in some other shop. In such cases, F. T. Broiles of the International Electric Company of Los Angeles, says that it has paid him well to know, from prepared charts, the correct winding data of motors and motor apparatus. These charts are gotten up in a form similar to "Take Off Material" sheets and provide a quick check. With the correct winding of the motor before his eyes, the man handling the work can readily note mistakes in winding or other careless errors of former workmen, which might otherwise take some time to locate.

This is one of the numerous small methods for saving time in the repair shop which are not only of value to the man who wishes to make the most out of the time of his employes, but also makes it possible for lower prices to be charged on repair work and thus pass the benefit along to the customer. It is just such kinks which lift the repair department from the position of a nuisance in the shop to that of an asset to the business.

ELECTRICAL HOME SCRAP BOOK ISSUED BY CALIFORNIA COOPERATIVE CAMPAIGN

The book on California Electrical Homes which the California Electrical Cooperative Campaign has had under way for some time is now ready for distribution. It has been prepared, as explained in the



One of the many illustrations which help to make the booklet published by the California Electrical Cooperative Campaign of practical value.

foreword, "in order that other sections of the country may benefit from experiences in connection with the California Electrical Homes," and is a comprehensive handbook of how such a campaign may be conducted.

The subject matter covers the objects of the Electrical Home campaign, the methods employed to carry it out, financing, wiring installation, appliance installation, interior decoration and furnishing, exterior illumination and advertising, as well as the details necessary in the management and exhibition of the Homes. Samples are given of booklets, profusely illustrated with views of the Homes, and methods used to call the attention of the public to their exhibit. The campaign used to put on the Adobe Electrical Home of Los Angeles is described in detail, as typical of how the principles outlined may actually be put into effect.

Considerable space is devoted to a discussion of advertising methods, the expense of which is borne jointly by the electrical industry and the other interests concerned. Newspaper advertising consisted of direct advertising, handled by the committee in charge and tie-in advertising, through the regular advertising space of the various electrical interests. Bill board advertising was used when advisable as well as street car advertising, gaged by the number of persons carried on this route. Extensive circularizing was done, both in the form of invitations and by distributed folders. All this was supplemented by news stories in the main sections of city newspapers.

Activities of the West

A Business Man's Department Devoted to Events and Developments in Western Industrial Centers—Including News of Interest to Readers in Public Utility, Industrial and Trade Fields

Electricity Aids Irrigation

Provo Reservoir Company's Pumping Plant Starts with 500 Hp. Installed

One of the large electrically operated pumping plants of the West, that of the Provo Reservoir company, situated at Jordan Narrows, about twenty miles south of Salt Lake City, Utah, was recently placed in operation. The plant, which has just been completed, consists of two units, with an initial capacity of 500 horsepower, and it will undoubtedly be increased from year to year, as the operations of the company increase. The larger of the two units is capable of pumping twenty-two second feet of water, and the smaller will handle ten second feet.

Shortly after the electric current was turned on 9900 gallons of water per minute was pouring into the company's canal 250 feet above the Jordan River Narrows. The canal flow thus augmented carries approximately 100 second feet of water, part of which flows south into the Utah valley, a distance of eight miles, and part north into Salt

at the head of Provo river, into which is collected overflow and regular flow of the river.

Toward midseason, however, depletion of the reservoir storage has necessitated the cutting down of the supply delivered to land owners under the canal, and the plan of using electrically operated pumps for increasing the flow into the syphon line from the Jordan river was conceived and placed in successful operation. The result will be to insure a steady and adequate flow through the canal throughout the entire irrigation season.

The canal has a maximum capacity of 125 second feet. Approximately 10,000 acres of land is susceptible to irrigation under the canal, and more than 7,000 acres are now being irrigated. The land lies from five to twenty miles south and west of Salt Lake City, and is of a rich, sandy loam, capable of producing large crops of alfalfa, sugar beets, potatoes and other staple soil products. Many thriving and profitable orchards have been brought to a high state of cultivation also in this section. Some of the finest homes and schools in the state have been built throughout the districts supplied by the canal. Paved roads reach within easy distance of nearly every farm home, and electric light and power afford conveniences that are unsurpassed in any farming section of the state.

Representatives of state officials, officials of Utah and Salt Lake counties, business men of Salt Lake and communities in the two valleys, many farmers whose lands are producing abundantly under the canal, and directors of the reservoir company were present at the ceremony which started the electric pumps. Many expressed wonder that water in such quantities could be lifted 250 feet, from the Jordan river to the canal level. This is the second highest lift in operation in the state of Utah.

Los Angeles Files Claim for Dam-site on Colorado River

The City of Los Angeles and the Board of Public Service Commissioners of the City of Los Angeles recently filed an application with W. S. Norviel, State Water Commissioner for the state of Arizona. The application is for a damsite in Boulder Canyon on the Colorado River. They also filed another application for permission to use the water to be stored there for power purposes.

The application stated that approximately 26,000,000 acre-feet of water will be stored behind the dam and that 10,400,000 acre-feet of this would be in Arizona and the balance in Nevada.

Columbia Entrance Deepens

Government Engineers Report Depth of 43 Feet Over a Width of a Mile

The channel at the mouth of the Columbia river continues to grow wider and deeper each year and the bogey of a "bar at the mouth of the river" is a thing of the past.

This is proven by the recent report of the United States Engineers Department, which has just completed its annual survey at the mouth of the river. The survey was conducted under the direction of Major Richard Park of the district office.

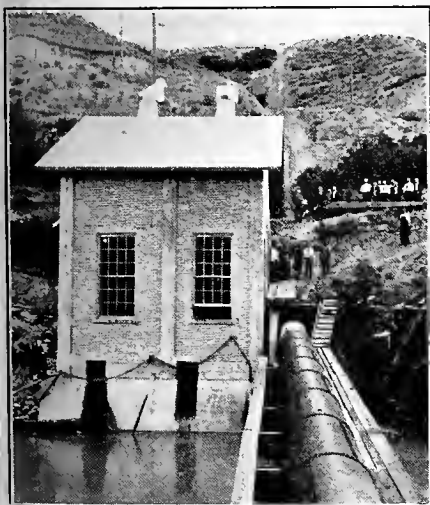
The report says that there is a channel 43 feet deep for a width of 5280 feet this year against the channel of 40 feet depth and 4500 feet width reported last year. There is also a channel of 42 feet depth for a width of 6400 feet this year.

This channel improvement results from the scouring action of the waters at the mouth of the river which flows between the north and south jetties constructed in 1913. The scouring is continuing constantly with the prospect that the channel will continue to improve from year to year.

With a channel 42 feet deep and 6400 feet wide the entrance to Portland is now one of the safest on the Pacific Coast. Some fear had been expressed that the heavy summer freshet this year would fill up the river channel, but the survey proves conclusively that the channel is in better shape than it has ever been before.

\$13,500,000 of Hetch-Hetchy Bonds Sold to Complete First Unit

The Construction Company of North America, which holds the contract for tunnel work in the mountain division of the Hetch-Hetchy project, purchased \$13,500,000 worth of 5½ per cent Hetch-Hetchy bonds on August 1st. The bonds were bought at par plus a \$10,000 premium which was paid to the city. The Construction Company also secured an option until November 1st, 1921, on an additional \$8,520,000 worth of the same bonds. The sale of these bonds makes available sufficient funds with which to complete the 18 miles of tunnel from Early Intake to Priest, the earth fill dam at Priest, penstock from that point to the Moccasin Creek Power House, and also for the construction of and the equipment to be installed in the power house. These bonds were placed on the market August 9th, and the first day's sales amounted to nearly \$1,000,000 on the Pacific Coast alone.



Recently completed irrigation pumping plant which has been placed in operation by the Provo Reservoir Company. Two electrically operated pumps requiring 500 hp. are installed.

Lake valley, more than twenty miles, carrying water to the farm lands of Riverton, West Jordan and Taylorsville districts in the central western section of Salt Lake county.

The plant was constructed for the purpose of pumping water from the Jordan river into the west arm of a syphoning system which the company has maintained for the last five years, and through which is conveyed water from the company's storage reservoirs

California Establishes Department of Public Works

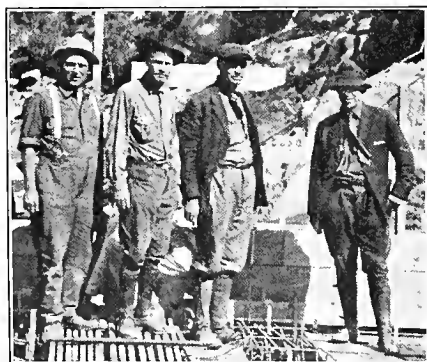
In accordance with measures passed at the last session of the California State Legislature, the Board of Control has completed the reorganization program which was called for in the interests of economy and efficiency in government affairs. The new program provides for seven departments under which all the work of the state will be done and which will replace eighty or more existing state agencies. Under the new program, which went into effect July 30, chief responsibility is vested in a Department of Finance.

For the present it was not considered feasible to make an immediate and absolute change of the full scope implied by the naming of these several departments. Existing departments will rearrange, for the most part, so as to conform to the new plan and to interfere as little as possible with the present personnel of governmental machinery.

The Department of Public Works will for the present have as its director, or senior engineer, the chief engineer of the State Highway Commission, who will add that duty to his present work without increase of salary. The department will have five subdivisions, as follows: Highways, Engineering, Water Rights, Land Settlement and Architecture. The State Engineer retains his title and continues his present duties under the general jurisdiction of the Department of Public Works.

Big Creek No. 8 Hydro-Electric Unit Completed

On August 11th, the Southern California Edison Company brought into service the hydroelectric plant known as Big Creek No. 8. This adds 30,000 hp. to the connected load of the company and is the third large power unit that this company has put into operation this year, others being the third unit of 22,000 hp. in the Big



Here are the men who built Big Creek No. 8 in record time. From left to right they are: O. H. Honnold, electrical foreman; Walter Bauermeister, foreman transmission lines; "Bill" Whitmire, construction foreman, and "Joe" Rogers, electrical superintendent.

Creek No. 2 and the 40,000 hp. plant on Kern River. Work on the Big Creek No. 8 plant started on May 4th, and the completion of the construction work in but a few days more than three months has established a record for power plant construction. In the illustration are shown the men who were "on the job."

One Million Cords of Alaska Pulpwood Purchased

Timber Resources of Alaska Made Available to Overcome Shortage of Paper Pulp in the United States

One million cords of pulpwood on the Tongass National Forest, Alaska, has just been sold by the Forest Service of the United States Department of Agriculture to the Alaskan-American Paper Corporation. The timber is located along the east shore of the Bohm Canal, Revillagigedo Island, about 32 miles from Ketchikan, the largest city in the Territory. The contract price of the timber was 60 cents per 100 cubic feet for spruce and cedar, and 30 cents per 100 cubic feet for all other species. The sale area covers 45,000 acres and extends for 55 miles along the coast. Twenty per cent of the forest is spruce, 66 per cent hemlock, and 14 per cent Alaska and western red cedar.

A condition award has been made by the Forest Service to the company pending approval by the Federal Power Commission of their application for a hydroelectric power license. The timber sale contract covers an initial period of 32 years, or until 1953. The price of the stumpage will be re-determined and fixed by the Federal Government in 1928, and every five years thereafter. Cutting must begin by October 1, 1923, thus allowing two years for organization and construction of improvements. The contract also requires the establishment of a pulp mill of not less than 25 tons capacity by October 1, 1926. A yearly cut of from 2½ to 3 million cubic feet is contemplated.

The award of this sale is in line with the general policy of the Forest Service for making available the timber resources of Alaska as a means of increasing the supply of pulpwood for the United States. The National Forests of the Territory probably contain 100,000,000 cords of timber suitable for the manufacture of newsprint and other grades of paper. Under scientific management, experts say that these forests can be made to produce 2,000,000 cords of pulpwood annually for all time, or enough to manufacture one-third of the pulp products now consumed in this country.

The Alaska forests also contain the second chief essential of the pulp and paper manufacturing industry, namely, water power. No accurate survey of the power resources has yet been made, but known projects have a possible development of over 100,000 hp., and it is believed that a complete exploration of the National Forests in southern Alaska will show not less than a quarter-million potential horsepower that can be developed from water.

Forest Service cruisers are now working in Alaska collecting data for further use and development of the forests. One block of timber containing 335,000,000 cubic feet—enough to keep a 100-ton pulp mill running, has been advertised and is now ready for sale.

Committee for Northwest Super-Power Survey Starts Work

The committee which has been organized to study the needs and desirabilities of working toward a super-power transmission system in the Northwest is soon to send out a questionnaire to the utilities and industries in that section to gather data for a comprehensive study of the entire situation.

It is not expected that active steps will be taken toward any actual construction within a period of several years as the immediate needs of the territory are being satisfactorily taken care of by the existing organizations and transmission systems. Until the industrial expansion exceeds the capacities of the present systems and the available minor power sites are all developed there appears to be no economic pressure which will force the development of the major power site which can feasibly be developed only in large blocks. In this territory the primary basis for the development of a super-power transmission system is not the saving of fuel but the expansion of industry and agriculture through the development of the large hydroelectric resources as yet practically untouched.

The work of the Super-power Survey Committee was highly endorsed by a resolution passed at the annual convention of the Northwest Electric Light & Power Association recently held in Portland, and the moral support and aid of the association was pledged to the committee.

Engineers Hear California Highway Situation Discussed

The San Francisco Engineering Council invited authorized representatives of the California State Highway Commission and the California State Automobile Association to discuss the points at issue in the controversy between these two organizations regarding the State Highway situation. W. C. Howe, consulting engineer and member of the board of engineers, who reported on conditions of the State Highway system for the Automobile Association, spoke for the association. He reviewed detail of criticisms of past and present policy of the commission and offered suggestions as to changes which were desired. T. E. Stanton, assistant highway engineer for the California Highway Commission, presented the case of the commission setting forth the policies it had followed and the limitations under which it had worked. Following the formal presentation, a spirited series of questions and discussions ensued. It was apparent from the discussion that the Automobile Association is willing to aid in raising funds for road work if suitable roads could be secured, and the Highway Commission seems to be more than willing to build adequate and substantial roads if sufficient funds are available. No plans were announced for further attempts to get the two sides together and check the present undesirable publicity attending the controversy.

Electric Range Sales Will Remedy Commercial Inactivity

H. F. Jackson, general manager of the Great Western Power Company, sees in the sales of the electric range, the electric water heater and other household appliances a means of stimulating trade. He also sees in the sales of this equipment an opportunity to render service to the people that will result in economies that are desirable at this time in the home. In speaking of the electric range campaign just instituted by his company, Mr. Jackson said:

"The company I represent, has issued orders for an immediate sales campaign for the electric range and the electric water heater. We propose to give our consumers the very best service and prices obtainable. We propose to assist our customers in financing themselves in the buying of these ranges and water heaters as well as giving them the advantage of such prices as we are able to secure on wiring material and wiring devices that go with them. The contractor-dealers of the communities which we serve will be given the advantage of these prices in order that the range installation may be made at the very minimum cost to our consumers. We are also making a sale of power at such a figure as to make the household range and water heater of economic value to the housewife. I see great possibilities ahead for the electric range and water heater and our company is going to do everything we possibly can to let our consumers benefit by the situation."

Industrial and Trade Exposition Los Angeles, Aug. 15-20

At the Exposition Building, located at East 7th Street near Alameda in Los Angeles, will be held an unique industrial and trade exposition market week. Members of the electrical industry will be unusually interested in knowing that a complete display of electrical devices will be made at this exhibit. The idea is that particular emphasis is to be given to bringing the electrical idea home to the public and to show the possibilities of electricity in industry, in agriculture and in the home.

Meeting of Advisory Committee, California Electrical Co-operative Campaign

August 1st and 2nd were red letter days for the electrical industry in Los Angeles due to the activities of the California Electrical Co-operative Campaign. At the open meeting held at the Jonathan Club on August 1st, the following representatives of the electrical industry were present:

Al Morphy, H. H. Courtright, G. E. Armstrong, Garnett Young, Ferguson, Harry L. Harper, A. B. West, A. W. Childs, K. E. Van Kuran, Robert Sibley, R. E. Eltringham, Clyde Chamblin, Carl K. Chapin, H. E. Sherman, A. O. Hollowell, Newton Graham, Allen, P. H. Booth, Phil Gough, J. O. Case, H. L. Miller, J. W. Redpath, Robinson Farmer, Frank Weiss, J. L. Kline and J. G. Pomeroy.

The discussions at the business sessions of the advisory committee were largely concerned with activities for the coming year, and it was decided that the Campaign would devote special emphasis to the installation of cooking and heating appliances in the schools and colleges of the state, doing everything possible to forward their use. Definite methods for forwarding the convenience outlet campaign by display signs and theater advertising were discussed. It was decided that joint offices of the Campaign be taken with the Pacific Coast Division, N. E. L. A.,

and that these headquarters be secured in the Rialto Building in San Francisco, if possible. It was specifically stated, however, that while joint offices were to be taken, that this did not mean the blending of the activities of the two associations without further sanction of the membership at large.

In order that complete unity of plan for the coming year may be evolved, it was decided to hold meeting with the four branches of the industry in Los Angeles and similar meetings in San Francisco to get the sentiment now prevailing, and the latter part of August to call a full meeting of the advisory committee of the Campaign in San Francisco to finally determine upon plans for the coming year.

Salt Lake City Commercial Club Appoints Water Power Committee

The Commercial Club of Salt Lake City has appointed a Water Power Development Committee, consisting of the following members: Lafayette Hanchett, chairman, president Utah Power & Light Co.; Simon Rosenblatt, secretary, Utah Steel Corporation; S. R. Inch, vice-president and general manager, Utah Power & Light Co.; R. H. Felt, district manager, E. T. Chapin Co.; R. E. Bailey, power sales manager, Utah Power & Light Co.; C. B. Hawley, vice-president and manager, Intermountain Electric Co.; J. J. Johnson, civil engineer; John F. MacLane, general attorney, Utah Power & Light Co., and C. E. Murdock, Gray & Murdock, engineers and contractors.

The duties of this committee will be to study applications for power sites, and to encourage proper development of the water power resources of the state of Utah.

Southern Contractors and Dealers Issue New Bulletin

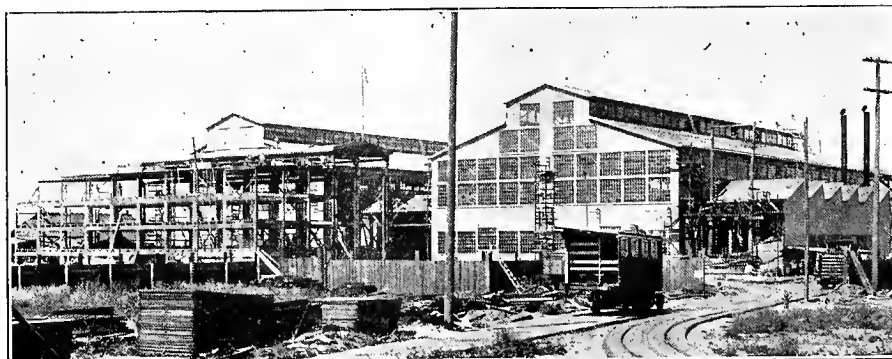
An attractive sixteen-page booklet has been issued by the Electrical Contractors and Dealers of the Southern District of the California State Association of Electrical Contractors and Dealers. Robinson Farmer, the able secretary of the Southern District, appears as editor of the bulletin. The initial number contains a little description of the Catalina outing of the Association, the Electrical Home Scrapbook, a poem on Co-operation by Richard E. Smith, and a description of one or two of the present day hydro-electric developments in the West.

New Tax System Advocated by Northwest Lumbermen

Adoption of the British Columbia yield tax system, with certain modifications was advocated by leading lumbermen at the closing of a hearing of the national forestry policy committee of the U. S. Chamber of Commerce, held in Seattle recently. The advantages of the British Columbia system, are that it does not compel the timber land owner to cut his timber and market it as rapidly as possible to avoid being "eaten up" by annual taxes. Members of the committee intimated they looked upon the British Columbia system favorably and probably would submit to a referendum vote of the affiliated and local chambers of commerce some such change in the taxation plan. The convention of Northwest Lumbermen, held in Chamber of Commerce rooms, Seattle, lasted two days, at which time matters of interest to lumbermen were discussed.

Willamette Iron Works Builds Large Industrial Plant

The construction of a \$500,000 plant for the manufacture of logging engines, Scotch marine boilers and marine engines by the Willamette Iron & Steel Works, at Portland, is of particular interest at this time because of the lack of any great activity in the Northwest in the field of large industrial construction during the past year. The new plant is being constructed on the water front site recently acquired by the company at the foot of Nicolai street. It will be equipped with over a thousand horsepower in electric motors and will employ a force of 200 men regularly. The Willamette Iron & Steel Works has operated a large plant in Portland for a number of years and is now the largest builder of logging equipment and Scotch marine boilers in the West. Upon moving to its new quarters, the company will work this field more aggressively and in addition will specialize in marine work of all kinds, including the building of marine engines. It also plans to re-enter the field of locomotive building in which it was quite active a few years ago and for which adequate facilities are being provided at the new plant. Construction work and the installation of equipment will be completed and the plant ready for occupancy early in October.



Half-million dollar plant of the Willamette Iron & Steel Works that is being built on the former site of the Foundation Company's shipyard at Portland, Oregon.

Court Gives City Right to Take Utility Properties

A decision affecting the right of municipalities in acquiring properties of public utilities by eminent domain proceedings was recently handed down by the U. S. District Court for the northern district of California, southern division. The case was that of the city of Los Angeles vs. The Southern Sierras Power Co., and the ruling of the court, applying the theory of higher use, allows the city to take certain of the company's hydro-electric properties over the protest of the company. The company has appealed to the U. S. Circuit Court of Appeals by a writ for a writ of error. A resume of the case as prepared by one of the company's engineers follows:

The Southern Sierras Power Company is a public utility corporation operating under the jurisdiction of the California Railroad Commission. For many years it has generated and supplied hydro-electric power to seven counties in the southwest portion of the state, many sections of which are dependent upon this company as the only available source of hydro-electric power. The combined system of the Southern Sierras Power Company and its related company, The Nevada-California Power Company, includes eight hydro-electric generating plants and about 800 miles of high tension lines. No part of the system, however, comes within 40 miles of the city of Los Angeles, nor is the company's service devoted to the Los Angeles district.

The Southern Sierras Power Company acquired from the Mono Power Company 320 acres of land through which the Owens River flows in the so-called Owens River Gorge. In crossing this parcel of land the stream drops 421 feet, thus affording a favorable opportunity for the development of hydro-electric power. Immediately upon acquiring the property, the company began the construction of a power plant to be added to its existing generating and transmission system. Subsequent to this, the city of Los Angeles instituted proceedings in eminent domain to secure the right to all the water flowing through the 320 acres of land purchased from the Mono Power Company, together with a right of way for a tunnel through that property. The city had conflicting plans for development which would completely bypass the company's plant. The property in question is located more than 300 miles from the city of Los Angeles and is more remote than any other units of a comprehensive power development plan proposed by the city which includes unfinished power plants along the Los Angeles aqueduct.

The court refused to consider evidence of the service rendered by the company, the absolute dependence upon it for service of certain cities and communities or its relation to these cities and communities as an agent, with rates and service governed by the State Railroad Commission; but interpreted a California statute as holding the demands of a municipal corporation superior to that of any public service corporation, regardless of the service rendered by the latter and regardless of the necessities of the consumers dependent upon that utility. The court gave the city full power to exercise the right of eminent domain and instructed the jury to disregard the value of the plant, most of which had been constructed after the beginning of the legal action, when placing a value on the condemned property. This latter point was contested because the suit was not brought to trial within one year, as required by statute. Under these instructions, the jury made an award of \$525,000. The case is now awaiting a hearing before the higher court.

Boards of supervisors of three counties, representing the major portion of the area where the company is selling the power in question, have instructed their district attorneys to enter appearance proceedings before the higher court and will endeavor to show that the counties would suffer if the company on whom they depend were to be deprived of the power rights in question.

The City of Los Angeles has sold the \$13,500,000 power bond issue voted in 1919 for the purchase of the Southern California Edison Company's distributing system within the city limits. These were sold on the basis of 88.63 per cent of the face value.

Catalina Island Convention

Inspiring Meeting of Southern District California State Association of Contractors and Dealers

After a lapse of twelve years, Catalina Island was again chosen for the annual outing by the Contractor-Dealers of Southern California. The two days, July 30th and 31st, spent in business and pleasure were instructive and inspiring—an atmosphere of appreciation of responsibility and individual indebtedness to the industry was the key note throughout.

In delivering his farewell address to the Southern Section, C. L. Chamblin president of the State Association, advocated a more unified purpose in supporting the next administration as well as association activities, and emphasized the fact that no man or firm following the practice of "cutting corners" could hope to accomplish constructive good nor succeed in business.

The report of the committee on standardization of motor and pumping plants, with Mr. F. T. Broiles of the International Motor Company, Los Angeles, acting as chairman, developed the fact that much work was needed to unify the methods and costs of motor pumping installations, differences in the present working standards of the power companies being reflected in some cases by 200 per cent variation in the costs of wiring and switchboards.

H. H. Courtwright of the Valley Electric Company, Fresno, in opening the discussion, submitted typical drawings of installations in use in the San Joaquin valley, clearly demonstrating the harm resulting to the industry because of the lack of standardization in such cases. The discussion resulted in the selection of a committee to cooperate with the power committee of the Pacific Coast Section N. E. L. A., and the power companies in the Southern District, W. S. Woods, Sacramento; F. T. Broiles, Los Angeles; D. Coldren, Riverside; Jess Zweiner, San Diego; and H. H. Courtwright, Fresno were to collect data at once for use in working out the problem. Robert Sibley, Editor of Journal of Electricity and Western Industry, gave as his opinion, that standardization of motor pumping installations is of real constructive value to the industry and to the field it serves and he tendered the offices of the Journal in publishing charts of typical installations, present and proposed, together with any helpful discussions which might be submitted. W. L. Frost, Southern California Edison Company, expressed the willingness of the Edison Company engineers to meet in joint committee work to solve the apparent difficulty. He took occasion to attack the "work shop" terminology heard during the discussion—stating that the substitution of such words as "pigs" for current transformers, or "cans" instead of steel cabinets, tended toward destroying the dignity of the profession, and made further addition to the confusion of electrical terms in the mind of the layman. Mr. Frost voiced a real appreciation on the part of the Southern California Edison Company, for the splendid support given to their financial campaign through the activity of the Electrical Development Army of the Los Angeles Electrical Club.

"Twenty Years Hence Electrically," was an illustrated feature story presented by Paul D. Howse. His charts were a series of clever, comic suggestions for further uses of electricity, and resulted in a laugh from start to finish. During a serious moment Mr. Howse forcibly brought out the value of electrical advertising by stating, that his firm alone, had installed during the last year a total connected load of 1500 kw. in display work.

The regular program of the afternoon meeting was followed by a round table discussion of subjects vital to the upbuilding of the contractor-dealer in business, and the presence of leading men of the California Electrical Cooperative Campaign together with the executive officers of the State Association of Contractors and Dealers, gave those in attendance an opportunity to hear the latest word in constructive policy and well directed effort.

The peculiar problems of the electrical industry during these readjustment periods and the opportunity and necessity for greater vision and more work, was in part, the message brought by Robert L. Eltringham, manager of the California Electrical Cooperative Campaign.

Earl Brown of San Francisco gave an interesting review of the trades and labor situation now so disturbed in that city. He stated that whereas 12,000 men are usually employed in the building trades, there are at present about 3500 at work, and under the leadership of the Chamber of Commerce the end of the "closed shop" was in sight. All present voiced the sentiment that the "American Plan" as introduced by San Francisco, represents the last word in solving trade lockouts and shutdowns.

G. E. Arbogast, representative of the California Electrical Cooperative Campaign, expressed the opinion that a better tone in the industry in Los Angeles is desirable and possible, claiming that only one-third of the electrical work in the city is done by the members of the association—under such conditions, he believed the standards are apt to go down and the convenience outlet be forgotten in the new work.

The subject of motor and motor wiring insurance in California, was introduced by H. H. Courtwright as a new departure in this part of the country. Such a question deserves the attention of thoughtful men of the profession and activity along such a line was promised.

The next district meeting was announced for September 17th, to be held at Riverside. The change in the time of the month was to prevent conflict between the meetings and the necessary collecting and other rush duties always present around the first of each month.

The convention closed with a banquet attended by 106 people with the ladies well represented. Many members of the party stayed over an extra day to enjoy the Island's pleasure resorts.

Robinson Farmer, secretary and treasurer, deserves the credit for the smooth manner in which the business sessions and entertainment features were conducted; in this he was ably assisted by district chairman L. Gans and representative A. L. Spring of the Cooperative Campaign in this district.

Electric Supply Jobbers Will Meet at Mt. Rainier

Unusual interest is evident in the forthcoming meeting of the Pacific Division, Electrical Supply Jobbers' Association, to be held at Paradise Inn, Mt. Rainier National Park, Washington, August 30, 31 and September 1, 1921. As this is the first meeting to be held in the Northwest for some time the attendance will be unusually large. Members of the industry are planning to go by bus line from Seattle, by boat and train from San Francisco and other California points and in some instances by private automobile. The discussions that take place will deal largely with the economic problems involved in the constantly lowering commodity prices, and the readjustment of trade conditions. In speaking of the meeting, Albert H. Elliott, secretary and attorney for the association had the following to say:

"We must make this Northern meeting a success, and that means you must go. Do not wait to enter Paradise (Inn) until you are dead! Ascend the Mountain (Rainier) while you have the strength, and Prophet Averill prescribes the plainest possible Ascension Robes. No Golf Sticks! No Trunks! Travel light! Bring your wives, children, warm clothes, tramping book and fishing tackle."

Pacific Coast Division N. E. L. A. Committee Appointments

A. B. West, president of the Pacific Coast Division, National Electric Light Association, has announced the committee appointments for the ensuing year:

Public Policy Committee—John A. Britton, Vice-Pres. & Gen. Mgr., Pacific Gas & Electric Company, San Francisco, California.

Public Relations Committee—R. H. Ballard, Vice-Pres. & Gen. Mgr., Southern California Edison Co., Los Angeles, California.

Engineering Committee—S. J. Lisberger, Engineer, Pacific Gas & Electric Co., San Francisco, California.

Accounting Committee—P. R. Ferguson, Auditor, The Southern Sierras Power Company, Riverside, California.

Publicity Committee—Charles Pierson, Southern California Edison Company, Los Angeles, California.

Commercial Committee—M. E. Newlin, Mgr. Comm'l Dept., San Joaquin Light & Power Corporation, Fresno, California.

Membership Committee—Northern Division: A. G. Jones, Special Solicitor, General Electric Company, San Francisco, California; Southern Division: R. A. Hopkins, Mgr. Power Division, Westinghouse Electric & Mfg. Co., Los Angeles, California.

Portland A. I. E. E. Formulates Plans for Active Year

Plans for the association work for the coming year were developed at a recent executive committee meeting of the Portland Section of the American Institute of Electrical Engineers and indicate another very successful year for the local section. It is expected that the program committee, with R. M. Boykin of the North Coast Power Co. as chairman, and L. T. Merwin of the Northwestern Electric Company and A. S. Moody of the General Electric Company as members, will provide an excellent series of programs. The committee is already active and will announce the tentative program for the year's meetings shortly.

It was decided to continue this year the plan of holding joint meetings with

Meetings of Interest to Western Men

the N. E. L. A. and the Contractor-Dealers, which proved so successful last year. The A. I. E. E. and the N. E. L. A. assume charge of alternate meetings and the Contractor-Dealers provide the program for one meeting during the year. The holding of joint meetings provides a medium where all branches of the electrical industry and all electrical societies in Portland are represented and where all phases and problems of the industry may be discussed to the mutual advantage of all. In addition, it makes possible, through the entertainment funds of the N. E. L. A. and the Contractor-Dealers, the serving of buffet luncheons and providing entertainment at the meetings which proved a big attendance builder to the meetings last year.

Chairman W. C. Heston and Secretary D. W. Proebstel of the Portland Section, A. I. E. E., attended the national convention of the Institute held in Salt Lake, the former as section delegate, where they participated in the discussion at the sections delegates' meetings and obtained many helpful ideas and suggestions which will be placed before the executive committee of the local section to help guide them in the conduct of the coming year's work.

Other committees in addition to the program committee mentioned were appointed as follows: Entertainment, A. C. McMiken, chairman; Lindsley Ross, E. F. Pierson, A. A. Tobey and L. E. Kurtichanoff; membership, Carl Whitmore, chairman; J. V. Strange, W. A. White, I. B. Sturgis, E. H. Albright, C. E. Canada, Stacey Hamilton, A. D. Leach, F. M. Redman and E. D. Pierson.

The executive committee of the Portland Section, A. I. E. E., is: W. C. Heston, chairman, and D. W. Proebstel, secretary of the section; E. F. Whitney, R. R. Robley and J. E. Yates. The executive committee of the local section of the N. E. L. A. is composed of: J. D. Scott, chairman; W. A. Dunlap, vice chairman; J. S. Groo, secretary of the section; J. Hampton and W. T. Fitch.

The San Francisco Electrical Development League was addressed at a recent meeting by F. G. Dunn, consulting engineer, who discussed the water power possibilities on the west coast of North and South America and the feasibility of transmitting this power for long distances at 220,000 volts. Mr. Dunn predicted that it would be economically possible in the future to transmit power

from the Columbia and Colorado Rivers to sections in the Mississippi Valley to supply this territory with much needed energy.

The Denver Section of the American Institute of Electrical Engineers has elected the following officers: B. C. J. Wheatlake, chairman; E. A. Phinney, vice chairman; Robert B. Bonney, secretary-treasurer. The officers of the section and the past chairmen who reside in the section territory, which includes all members residing within 120 miles of Denver, constitute the executive committee. The past chairmen at present are: H. S. Sands, Westinghouse Electric & Manufacturing Co., Denver, Colo.; Norman Read, Colorado Power Co., Denver Colo.; Dean H. S. Evans, University of Colorado, Boulder, Colo.; D. C. McClure, Denver Gas & Electric Co., Denver, Colo.

The San Francisco Engineers' Club has issued a roster of the names of its members, their business and home address, together with business and residence telephone numbers of its members. There is also appended the rules and bylaws of the club and the officers of the club since the date of its inception in 1912. The San Francisco Engineers' Club now numbers almost six hundred members and is an institution that has become recognized as the home of all local engineering and technical society activities. J. E. Woodbridge, Pacific Coast representative of Ford, Bacon & Davis, is the president of the club.

The Los Angeles Section of the A. I. E. E. has elected officers and appointed committees for the coming year. Herbert H. Cox is chairman, J. N. Kelman, secretary, and E. R. Stauffacher, assistant secretary. The executive committee consists of these officers and R. W. Sorenson, Otto Miller, Carl Johnson and H. C. Gardette. The membership committee consists of Carl A. Heinze, chairman; O. F. Johnson, N. B. Hinson, R. A. Halpenny and R. A. Hopkins. At present the section has 195 members and 89 student members.

The Ogden Chapter of the American Association of Engineers held its first of a series of weekly luncheons at the Weber Club recently. President B. W. Matteson was toastmaster. The first speaker was Captain Ora Bundy, in charge of the quartermaster department of the new U. S. government arsenal recently completed at Ogden. Captain Bundy extended an invitation to the engineers to inspect the arsenal, and spoke of other activities at Ogden, urging the engineers to get back of the Wild West Show, to be held at Ogden in September.

COMING EVENTS

INTERNATIONAL ASSOCIATION OF MUNICIPAL ENGINEERS
Colorado Springs, Colo.—Sept. 6-9, 1921

ROCKY MOUNTAIN DIVISION N. E. L. A. AND COLORADO ELECTRIC LIGHT, POWER AND RAILWAY ASSOCIATION
Glenwood Springs, Colorado, Sept. 19-22, 1921.

PACIFIC DIVISION NATIONAL ELECTRICAL SUPPLY JOBBERS' ASSOCIATION
Mt. Rainier National Park, Washington, Aug. 30, 31 - Sept. 1, 1921

H. R. Bashford Company have removed their wholesale departments to the new Furniture Exchange Building on New Montgomery Street, San Francisco, and are now occupying spacious quarters on the first floor with a line of household labor-saving appliances. The officers of this company are: H. R. Bashford, president, and G. P. Egleston, general manager.

Keeler-White Company have established their Los Angeles office at 211 So. San Pedro Avenue, in a one-story brick building 30 x 100 ft. They will carry a full stock of their various lines at their new location.

Gordon A. Furlong has opened an electric shop at Alamosa, Colo., and will handle a complete line of household electrical appliances, and in addition do electrical repair and contracting work.

W. H. Whiteside, head of the Western Electric Company in Pasadena, California, is on a business trip through northern California.

P. S. Shrylock has purchased and is now in control of the Buena Vista Electric Light & Power Co. of Buena Vista, Colo. The new manager announces that he contemplates making some improvements in the property.

The Electrical Equipment Co. will occupy the new building now in course of construction at 314 North Central Avenue, Phoenix, Ariz. The company now maintains five similar plants in other Arizona cities. E. L. Gielow of Phoenix is president and general manager.

The Electric Vacuum Cleaner Co., Inc., Cleveland, Ohio, has issued a pamphlet entitled "Your Central Station Electric Service." This little pamphlet is a definite expression of the good will and cooperation that is coming into the electrical industry.

H. A. Holland of Portland, Ore., has purchased the lines and plant of the Yaquina Electric Co. It is understood that no immediate changes in the property are contemplated.

The Main Electric Co. has been incorporated by J. S. Schaife, C. E. Peterson and E. A. H. Peterson, with a capital stock of \$10,000 to carry on a general electric contracting, engineering and supply business in Portland.

W. E. Clarke, until recently Pacific Coast representative of the Washington Brick, Lime & Sewer Pipe Company, Spokane, has been promoted to the position of Pacific Coast manager. Mr. Clarke maintains offices in Seattle, at 1733 Westlake Avenue N.

E. M. Gray and E. H. Streeter, Snohomish, have leased a mill site on Lincoln and East Streets, on which they propose to erect a small modern sawmill plant, for cutting spruce siding. The plant will be electrically operated throughout.

The Westinghouse Electric & Mfg. Co. has issued an interesting and instructive pamphlet reviewing the operating efficiency of Westinghouse turbine units of 30,000 kilowatt and higher capacity. This covers a series of reprints from articles which originally appeared in technical and trade papers giving a record of the performances of eleven of these large units and of any trouble they have had, and some of the interesting features connected with their operation.

Manufacturer, Dealer, and Jobber Activities

The Busch-Sulzer Brothers Diesel Engine Company is installing a 750-hp. Diesel engine for the city of Palo Alto, California.

Robert J. Ward & Company, designers and manufacturers of lighting fixtures, 206 South Thirteenth St., Philadelphia, announce that they are about to place upon the market a new electrical article called a "Tassel Plug," for placing at the bottom of a chandelier as a plug attachment to which may be attached toaster, percolator, lamp or appliance where an extra plug attachment is desired.

J. W. Thompson, formerly with Alexander and Lavenson Co., is now with the Western Agencies, Inc., 711-715 Mission St., San Francisco, as a sales manager.

The Kwick-Lite Electric Corporation, 360 Kearny St., is manufacturing and marketing the Kwick-Lite electric lantern which has special safety features with two lamps and a duplex battery, which assures reliability. This is an especially dependable lantern for railroad, factory, mining, marine and general household uses.

The Turner Brass Works, Sycamore, Ill., has recently perfected and placed on the market a new style Turner blow torch.

The Edison Electric Appliance Company, Inc., 5660 W. Taylor St., Chicago, Ill., manufacturers of the Hughes Edison electric ranges, have placed on the market an entire new line of electric ranges. There are seven models in the new line varying in size from a three-burner, low oven type, to a large six-unit, two-oven and two-boiler equipped type. The ranges are furnished, as specified, with either the sheath wire or the open coil type surface heating units. The new ranges are equipped with a specially accurate oven thermometer and have other features which make them especially up-to-date appliances for the electrical home.

Geo. A. Gray, of George A. Gray Co., has returned from the Sacramento and San Joaquin Valley districts and Southern California, where he studied business conditions. He will leave shortly for a trip through the Northwest for a similar purpose.

The Berthold-Strecker Company announces that the San Joaquin Light & Power Corporation has installed four additional Stevens Continuous Water Storage Recorders on the projects they are now developing.

W. W. Weir has been employed as manager of the electric home department of the Great Western Power Company, to assist and supervise the sales campaign of electric home equipment announced by the company.

P. N. Engel, president of the International Filter Company of Chicago, Ill., is leaving shortly for a visit to the Pacific Coast to make an investigation of market conditions for steam power plant design on the Pacific Coast.

The Trumbull Electric Mfg. Co., of Plainville, Conn., announce a new and revised line of externally operated entrance switches, 2, 3-pole, 125 and 250 volts, for use with or without meter trims or back plate. This line does not conflict with the line of meter service switches with contacts for testing which was announced a few months ago but does away with the meter trim which fitted against the meter terminal chamber and provides an end wall trim which snaps firmly into the end of the box and fits over the terminal chamber of the meter. These trims are made to fit Sangamo, G. E. 1-14 and Westinghouse O. A. meters.

The Ward-Leonard Electric Company has issued a pamphlet describing their Vitrohm (Vitreous enamelled) Resistor Units.

R. A. Patterson is the Pacific Coast representative of the Copper Clad Steel Company of Braddock, Pa., and expects to locate in San Francisco. The Copper Clad Steel Company manufacture the "Copperweld" brand of wire.

The Rutenber Electric Company, of Marion, Ind., manufacturers of electric heating and cooking appliances, calls our attention to an error in a note appearing in the July 15th issue of Journal of Electricity and Western Industry concerning the Western Agencies Company. The statement was made that the Western Agencies Company was factory representative for the Rutenber Motor Company. This should have been the Rutenber Electric Company, which is absolutely a distinct company from the Rutenber Motor Company.

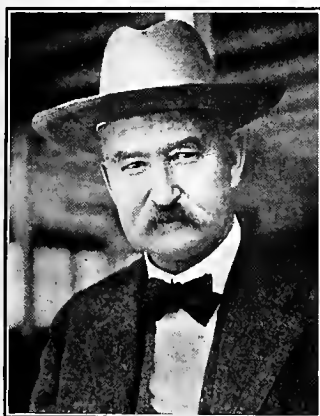
The Cutler-Hammer Mfg. Co., of Milwaukee, Wis., manufacturers of electric controlling devices, announce the manufacture of a new automatic starter to be listed as No. 9604. The particularly interesting feature about this new starter is a new type of mercury overloads which are used. The overload relay consists of a glass tube carrying a mercury column, one section of which is surrounded by a thermal element. The element is heated in the same proportion as the motor windings. Excessive current passing for too long a period heats the coil, causes the mercury to boil and the vapor to pass up into a chamber at the top of the tube. This breaks the liquid mercury column and opens the circuit to the magnetic coil. After an interruption the thermal elements cool down and the mercury then becomes liquid. Until the overloads reset themselves the motor can not be started.

H. F. Hartzell, sales manager of Baker-Joslyn Company with headquarters in San Francisco, has been in Southern California looking after business interests of his company and incidentally dipping into the refreshing waters of Long Beach, California.

The Apex Electrical Distributing Company has recently put out a transparent dust bag for demonstrating the Apex Electrical Suction Cleaner.

L. B. Osborn has succeeded P. H. Smith as manager of the Thor Electric Shop at 124 Post Street, San Francisco. Mr. Smith succeeds E. A. Lynch as manager of the Los Angeles Thor Electric shop.

Albert B. Fall, Secretary of the Interior, former senator for New Mexico, farmer, stock raiser and mining man whose home is in Three Rivers, N. M., is in the West in the interests of his department. He is particularly investigating the possibilities of development of hydroelectric power in the National parks and on the public domain. As one of the members of the Federal Power Commission, it is highly important that he should have first hand information regarding the operation of



ALBERT B. FALL

the legislation affecting power development, and it is gratifying to those interested in water power legislation and the operation of the Federal Power Commission that Secretary Fall is making this personal investigation. While here, Secretary Fall stated that he was in favor of the establishment of the offices of important divisions of the Interior Department in the West. This is along the lines advocated by the Journal. Secretary Fall will visit all parts of the West before returning to Washington.

R. B. Hale, who did so much in forwarding the Panama Pacific International Exposition in its early stages of development, is now devoting much of his time toward forwarding the California Agricultural and Industrial Development Association, particularly with reference to putting in permanent exhibits in various prominent cities throughout the nation, these exhibits to set forth the industrial and agricultural possibilities of California. His first activity has manifested itself in the rehabilitating of the industrial and agricultural exhibit at the Ferry Building in San Francisco.

Robert L. Eltringham, executive manager, and A. L. Spring, field agent of the California Electrical Co-operative Campaign, were in attendance at the Catalina Island Convention of the California Association of Electrical Contractors and Dealers and offered many helpful suggestions in discussions concerning the betterment of the industry in California.

Doris Estcourt, assistant editor of Journal of Electricity and Western Industry, has resigned her position to become a writer on development problems of the Far East. She leaves for Peking, China, on the steamer Chinyo Maru, August 23, 1921, where she will remain indefinitely.

Personals

E. O. Edgerton, president of the East Bay Water Company with headquarters in Oakland, California, and formerly president of the California Railroad Commission, has recently returned from a business trip to the southern counties of the state where he has been looking into the question of increasing the efficiencies of water distribution.

Rolfe C. Gosrow, consulting metallurgist with headquarters at Marysville, California, has left for eastern business centers and will be gone for some weeks. Mr. Gosrow has given a great deal of attention to synthetic production of pig iron and is doing considerable research along these lines with a view toward possible western installations.

F. G. Baum, consulting engineer for the Pacific Gas & Electric Company for the Pit River development work, gave a most interesting talk recently before the San Francisco Electrical Development League on the 220,000-volt situation in the West. This paper will appear in an early issue of the Journal of Electricity and Western Industry.

J. W. Lane, of the Lane Electric Company, Long Beach, appreciates the wisdom of a correct application of electrical merchandising methods by contractor-dealers. With his store only one year old, Mr. Lane says he fully realizes the value of the services rendered by the Cooperative Campaign and is looking for more room to try it out on a much larger scale.

A. B. West, vice-president and general manager of the Southern Sierras Power Company, and J. Bordwell, assistant auditor of the company, are on an extended business trip to the power plants of this company situated in Inyo and Mono counties.

Harry J. Billica, district line materials manager for the Western Electric Company, has returned from an extended trip through the Northwest.

Professor Robert L. Daugherty of the Department of Mechanical Engineering at the California Institute of Technology was selected to head the Los Angeles section A. S. M. E. The section now has 168 members, closing its last year in third place for percent increase during the year. The first regular meeting will be called for the latter part of September.

J. W. Redpath, secretary of the California Association of Electrical Contractors and Dealers, says, "Sell by the Trade Mark" in all electrical affairs of the future. In other words, now is the time for all to co-operate in a real, helpful, substantial manner.

H. L. Harper, president of the Los Angeles Electric Club, after having put over a successful season with his club activities, is preparing for renewed activities in the fall. The slogan, "I Am a Stockholder in My Power Company—Are You?" and the manner in which the slogan was put over in a recent drive has caused nationwide comment.

E. S. Jones, formerly assistant engineer for the Pacific Gas & Electric Company at Sacramento, California, is now engineer for the Honolulu Gas Company, Ltd., at Honolulu, T. H.

Robert W. A. Brewer, well known in cities of the West for his excellent work for the British Government during the war as a captain in the British service and inspector for the British supplies that were being purchased in the West, is now located at Buffalo, N. Y., where he has undertaken consulting mechanical engineering work as a carburetion specialist.

Cruse Carriel, formerly associated with Journal of Electricity and Western Industry but more recently acting as Oriental correspondent for the Journal, has returned for a brief visit to Pacific Coast cities and is spending some time in San Francisco.

John R. Tomlinson, prominent contractor-dealer of Portland and treasurer of the Oregon Association of Electrical Contractors and Dealers, has been a potent factor in guiding the destinies of the organization and feels that his goal will have been reached when the Northwest Electrical Service League has accomplished its purpose.

Mr. Tomlinson is one of the real veterans in the electrical contractor-dealer business and is well known throughout the Northwest in this field. He began the business 18 years ago with the M. J. Walsh Company, and after 8 years helped organize the firm of Pierce-Tomlinson Electric Company, which has grown from a small shop to its well equipped and modern up-town store. He has thus seen this branch of the electrical industry grow from practically nothing to the impor-



JOHN R. TOMLINSON

tant position it now occupies, namely the most important factor in the distribution of electrical merchandise and electrical installations.

He has perhaps done more than any other one man in the interests of the Oregon Association of Electrical Contractors and Dealers, having tided it over many a rough spot by helping hold the members together when dissension threatened the ranks. He is a strong advocate of cooperation in the industry and helped organize the Northwest Electrical Service League and is now one of the prominent members of the advisory committee of the League.

Norman H. Sloane, secretary-manager of the California Agricultural & Industrial Development Association, with headquarters in the Ferry Building, San Francisco, is undertaking some extended activities for the betterment of industry and agriculture in the West. The California Industries Association and the California Development Board have recently been combined into the organization of which Mr. Sloane is now the secretary-manager. The function of the new organization is to



NORMAN H. SLOANE

bring the city to the country and the country to the city in the development of industrial and agricultural life of the West. A survey of the state of California is being made as to market conditions, home building, industrial development and many other factors of vital interest to western growth. The work in which Mr. Sloane is engaged is of such high character as to command the earnest backing and hearty cooperation of all well wishers of the West.

David P. Barrows, president of the University of California, has been appointed a member of the National Research Council. President Barrows' appointment is for a period of three years.

George C. Westby, consulting metallurgical engineer of Missoula, Montana, is now at Kamloops, British Columbia, where he is giving considerable attention to electro-chemical and electro-metallurgical possibilities of that region. Mr. Westby is well known for his activities in the copper smelter activities of the West.

Paul B. Kelly, research assistant at the University of California, who has written the important series of Cost Accounting articles now appearing in the Journal of Electricity and Western Industry, will return shortly from a two months' trip to Oriental ports. He is now in Shanghai after having spent one week in Korea and three weeks in Peking.

C. C. Hillis, secretary-treasurer of the Electric Appliance Company with headquarters in San Francisco, is reflecting honor and glory upon his organization as well as upon the electrical industry in general by the manner in which he is rolling up golf scores. Recently he has proven quite consistent in a 71 and 72 score at the Claremont Country Club course.

J. E. Brown, formerly of the Westinghouse Electric & Manufacturing Company, Boston Office, is now located in Los Angeles and has taken up the duties of Mr. Knost as Krantz representative and lighting specialist.

Herbert Fleishhacker, president of the Northwestern Electric Company of Portland, recently passed through Portland on the last leg of a motor drive with his family to the national parks of the intermountain and Pacific Coast states, visiting the local offices of the company and calling on bankers of the city.

Desmond Fitzgerald, well known hydraulic engineer for the Boston Metropolitan Water Board, and Frederick L. Olmstead, one of the country's leading authorities on landscape architecture, are investigating the water power situation in the national parks of California and will extend their investigations to the Kings River country.

E. B. Criddle, general agent for the Southern Sierras Power Company, is a recent San Francisco visitor and is attending sessions of the California State Railroad Commission in behalf of his company. Mr. Criddle has also been attending informal sessions held recently in San Francisco in behalf of the coming activities of the Pacific Coast Division, N. E. L. A.

Roland L. Oliver, president of the California Cap Company with headquarters in Oakland, California, is assisting in forwarding the hydroelectric development of the West by issuing helpful statistical data through the trade literature that is being sent out by his company, which will carry the message of the West into many allied industries not hitherto reached.

James Cranston, Northwest district manager for the General Electric Company with headquarters at Portland, Oregon, has undertaken the chairmanship of the electrical committee for the Atlantic-Pacific Highways Exposition to be held in Portland in 1925. Mr. Cranston is now actively engaged in getting preliminary designs, estimates and plans for the great exposition of that year.

Harry W. Turner, general manager of the Montana Electric Co., with headquarters in Butte, Montana, has returned from a trip of several weeks to the Hawaiian Islands and is spending several weeks in California. Mr. Turner reports business conditions in the Hawaiian Islands as depressed, due to the situation of the sugar market and the depreciation of Japanese labor. Business men, he states, think that the only solution is to pass legislation of such a character as to admit contract labor from the Chinese.

Fred Harvey, a prominent rancher situated near Galt, Cal., has been elected president of the Association of California Farm Bureaus for the ensuing year. Mr. Harvey is a graduate of the Massachusetts Institute of Technology from their engineering courses and he brings to the new office an analytical mind of unusual caliber. There is a message for the electrical industry and a message from the electrical industry to be given to the Farm Bureaus, and it is believed that Mr. Harvey will assist in carrying these messages with the utmost clarity.

Dexter S. Kimball, a graduate of Stanford University and now Dean of Engineering at Cornell University, has been nominated for the presidency of the American Society of Mechanical Engineers. Dean Kimball, it will be remembered, is a well known figure in the West. For many years he was engaged in engineering activities with the Union Iron Works at San Francisco. He is the author of several well known text books and is today one of the leading figures in engineering life of the nation. Men of the West will take unusual interest in assisting Dean Kimball in every way possible in the putting over of a successful year with the American Society of Mechanical Engineers.

Parker M. Robinson, with the Westinghouse Electric & Mfg. Co., has been transferred to the Los Angeles office from East Pittsburgh to take up his duties as steam power plant equipment specialist. His duties on the Pacific



PARKER M. ROBINSON

touch with all sales regarding power plant equipment in the southwest, also northern part of Mexico. Mr. Robinson is a graduate of the University of Pittsburgh, and Yale University (Sheffield Scientific School). He has been connected for the past two and a half years with the Engineering Department of the Westinghouse Electric & Mfg. Co., at East Pittsburgh. During the war Mr. Robinson served as a First Lieutenant in the Ordnance Department of the United States Army.

Obituary

John S. Andrews, president and manager of the Ferro Concrete Company, Seattle, died in Seattle recently. Mr. Andrews was one of the best known builders of the Northwest, coming to Seattle in 1906 to erect the American Bank Building, the first reinforced concrete structure of the "skyscraper" type to be erected in the Puget Sound country. Following this construction, Mr. Andrews engaged in building a number of large buildings in the Northwest. He was born at Caithness, Scotland in 1861, coming to the United States in 1886.

Business Outlook in Western Market Centers

Reflecting the Trend of Community Thought on Conditions and Events Affecting
Business and Industrial Activities Throughout the West

SAN FRANCISCO

Men in all lines of business are waiting for the final settlement of the strike in the building trades with more than usual interest. All indications now point to final settlement upon the American plan. The majority of business and industrial men are definitely behind the movement to establish all labor operations in San Francisco upon the American plan as being the only satisfactory solution to the unsatisfactory labor conditions that have existed in the city and vicinity for the last twenty years. With final settlement of the building trades strike there will be a large resumption of building activity and a decided stimulus to all lines of commercial activity.

In general, business remains unchanged. Retail merchants are buying only for immediate needs. Collections are fair. There is, however, a definite undertone of optimism, and it is felt that business in the Bay District will rapidly reflect the improvement which is now becoming apparent throughout the East.

LOS ANGELES

General business conditions continue to show stability, and, in most instances, growth as well.

The summer season is about over and strictly hot weather trade has been forced to accept a market decrease in quantity for 1921. This applies to ice companies, dealers in summer furniture, and in the decreased population at the seaside resorts. Small fan motor business and electric driven refrigeration machines have been out of season all summer.

Building operations continue to set new records, in spite of lower unit costs. This is a real sign of volume and with labor plentiful there is not the waste of last year in bidding for skilled help. The soundness of a reduced price policy for 1921 crops, adopted by many grower organizations, seems to be justified by the volume of business done, and there will be little to carry over as a result. Combined totals compare favorably with 1920.

Manufacturing industries continue to increase in numbers, swelling total outputs, although separate lines, as a rule, report volume about the same as last year, with unit values some lower.

Banking figures still show small increases for the district, with local conditions in some neighboring cities making 25 per cent to 30 per cent gains over same date last year. Conservative people are still wondering how to explain the throwing away of the public funds, as a result of the action of the City Council. The Edison purchase bonds were sold under peculiar cir-

cumstances with a loss estimated anywhere from \$500,000 to \$2,000,000.

The oil industry finds this a good time to adjust itself to the American Plan, as low prices for oil and high costs of operation do not mix well, for long. As a result, activity is only on the increase in exceptional fields, and elsewhere a letting up is noticeable.

SALT LAKE CITY

Many indications point to a turn for the better in business conditions in the intermountain section. One of the most notable features in local banking circles is the announcement by the federal reserve bank that it has reduced its rate of rediscount from 6 to 5½ per cent, which is an indication of less stringency. The demand for money continues, but considerable restriction is being made as to loans. The country banks, which are being called upon to finance farmers, are in turn calling on the city banks for accommodation.

Building operations, principally the building of homes, continue to be very active, and this favorable situation is reflected in greater demand for electrical material of the class used in such building. Ranges, and also smaller appliances, are moving somewhat more satisfactorily than they have for some time past, due principally to price adjustments in several lines.

Crop conditions are excellent practically throughout the intermountain section, and harvesting is now being done. It is expected that there will be a more normal marketing of crops this year than for some time past, with more satisfactory results to farmers, even at lower prices than prevailing last year, because of the reductions in cost of raising the products. Wool is moving, and while the movement of this commodity is slow, a substantial percentage of the crop has been sold.

PORTLAND

Buyers' week, with a record attendance, held recently, had a very marked stimulating effect upon wholesale buying, and early Fall buying coupled with this has tided the city over the recent period of depression in wholesale and retail lines. The general business situation looks better daily and it is expected that a gradual improvement will take place from now on. There is a brighter prospect for the lumber industry than for some time, because of the anticipated large purchase of the railroads, a fair export trade, particularly with Japan, and the increased activity in building. Contracts will soon be let for three new hospitals costing approximately \$600,000, several new public school buildings to cost half a million dollars

and a \$1,250,000 apartment-hotel. In addition to this, two large industrial plants, each costing approximately \$400,000, are nearing completion. Export business of the port is very good, with wheat leading in value, and it is expected that the value of exports this year will lead that of last year by many millions of dollars. General price reductions in electrical goods and increased activity in building are beginning to manifest themselves in the volume of business being done by the electrical contractor-dealers.

SEATTLE

Pending a clearer view of crop returns and the disinclination to buy on falling market, conditions have not materially improved in the Puget Sound section during the past month. Manufacturers in the district report general volume of business has shown no particular change. However, there is an optimistic feeling prevalent and this extends to the jobbers and retailers. Stimulation of business as a whole is forecasted by prospects of agricultural crops, and this coupled with the re-opening of mills and logging camps throughout the district, indicates an encouraging return to more nearly normal conditions.

Unofficially reported the fruit crop of the Wenatchee Valley district will bring to the growers about \$17,000,000, while the growers in the Yakima district will be enriched this season by at least \$20,000,000. The prunes and small fruits on the west side of the mountains, will, it is asserted, add more than \$10,000,000 to this total. The harvesting of one of the largest crops of wheat ever grown in Washington is now well under way, and the aggregate returns from this source are expected to be at least \$40,000,000, even though the price may average well under \$1 per bushel. The stockmen, hit hard last year, now see light ahead. Spring lambs have been bringing fair returns, although high freight rates are keeping down the profits. The heavy snows of last winter and the late rains have kept the ranges in splendid conditions, with the result that sheep and cattle are fattening rapidly.

Favorable agricultural situation promises unusual purchasing in Seattle this fall. General purchasing has been curtailed to a minimum for more than a year, but with ready money in hand this fall, there should be an encouraging pickup in business.

The West Coast Lumbermen's Association, in a recent statement, covering activities of Northwest mills, for the week ending July 23, reported production of 50,584,143 feet, which is 34 per cent below normal. New business totalled 43,439,444 feet, shipments totalled 48,952,172 feet.

Construction News and Industrial Developments

Suggesting to the Engineer, Contractor, Manufacturer, Dealer, Agent and
All Business Men Opportunities for New Business

THE PACIFIC NORTHWEST

PORTLAND, ORE.—The Northwestern Electric Co. of Portland has announced a 5 per cent reduction in its steam heating rates, made possible by a reduction in the price of fuel oil.

HOQUIAM, WASH.—A large oil distributing plant to serve Grays Harbor and contiguous territory will be constructed by the Union Oil Company of California during the next few months.

SALEM, ORE.—Application has been filed with the state engineer by Olga Netter of Aurora, Ore., to appropriate water from two unnamed tributaries of Pudding River for power development.

CHEHALIS, WASH.—The mill of the Meskill Lumber Company, near Chehalis, owned by W. F. Downs, recently destroyed by fire, entailing a loss of \$75,000. Understood the plant will be rebuilt.

KELSO, WASH.—The Lewis River Hydro-Electric Power Company of Vancouver, Wash., has filed application covering four power projects on the North Fork of the Lewis River, above Kerns, Cowlitz county.

CHEHALIS, WASH.—The North Coast Company of Chehalis, Wash., is changing over their power plant from coal to hog fuel. Lewis & Watts of Seattle and Portland have a contract for the installation of a complete conveying system, and the necessary changes to the boilers.

EUGENE, ORE.—A new concrete forebay and penstock are being installed at the Eugene municipal hydroelectric plant on the McKenzie River. Service for the city is being supplied by the Mountain States Power Company while the plant is shut down for the new construction work.

MADRAS, ORE.—The installation of a new street lighting system has recently been completed by the Dechutes Power Company, under the supervision of A. M. Wilson, local manager. Madras now has 25 street lights which adequately light the business and residential sections of the city.

ABERDEEN, WASH.—The city council of Aberdeen has authorized the city attorney to protest before the public service commission the 4 cent increase in street car fare put into effect July 15 by the Gray's Harbor Railway & Light Company. The fare on the company's lines is now 10 cents.

LA GRANDE, ORE.—Residents of this city have circulated petitions requesting the city council to refrain from taking any further steps toward changing the town's street lighting system to a new and more modern type. Uncertainty of business conditions is given as the reason for the action.

SPOKANE, WASH.—In the U. S. District Court in Spokane recently, Judge Frank H. Rudkin ordered the sale of all the assets of the Wenatchee Valley Gas & Electric Company in order to pay up the receiver's certificates outstanding amounting to \$147,000. The date of the sale was fixed for August 19.

EVERETT, WASH.—Harry L. Gary has been named temporary receiver for the Everett Bed Manufacturing Company of Everett, recently declared insolvent. An order has been issued by Judge Guy C. Alston in the Snohomish County Superior Court requesting the company to

show cause why such receivership should not be made permanent.

SPOKANE, WASH.—The Boyd-Conlee Company, hay, grain, flour and feed dealers, have begun the construction of a \$30,000 warehouse and feed mill. The main building will be 60 feet wide, one-story with cement floors and walls of 12-inch interlocking tile. The building will have 9,000 feet of floor space.

PORTLAND, ORE.—The city council has granting a building permit for the construction of a \$200,000 surgical hospital to be built at 19th and Kearney streets for a group of local physicians. Plans will be prepared immediately by Strong & MacNaughton, architects, and construction will begin within three months.

PORTLAND, ORE.—The general contract for the construction of a five-story unit to the Good Samaritan hospital has been awarded to Trenchall & Parelus, local contractors. The structure will be of reinforced concrete with face brick exterior backed with hollow tile. It will be 38x124 feet in dimensions. Construction work will begin immediately.

PORTLAND, ORE.—Bids will be called for immediately on the construction of the four-story annex to the University of Oregon medical school on Marquam Hill. The proposed structure will be four stories and basement, 68x150 feet, of reinforced concrete construction, faced with brick and terra cotta trimmings. The estimated cost of this new unit is placed at \$250,000.

WALLA WALLA, WASH.—Contracts between the city and the Pacific Power & Light Company for the illumination of the city's streets recently expired, and no steps have been taken toward renewal. The city commissioners are desirous of replacing the residential light standards with more modern types, and have set up several decorative standards for the people to inspect.

STAYTON, ORE.—The city council of Stayton has granted a franchise to Walter Ross of Portland to transmit electric power through the town and for individual use for manufacturing purposes. It is reported that Mr. Ross will erect a power plant for the distribution of light and power to farmers but will not cater to any business that belongs to the Stayton Light & Power Company. The franchise is for a period of 40 years.

KENNEWICK, WASH.—The Church Manufacturing Company is making plans for extending its cold storage facilities at Pasco and Kennewick. The grape juice manufacturing plant will also be enlarged, bringing its capacity up to 100,000 gallons this season. The Pasco plant is being improved in order to handle 130 to 150 cars of apples in cold storage, while the Kennewick plant will take care of from 40 to 50 cars. This increase in business has required an increase in capital stock from \$250,000 to \$350,000.

GEARHART, ORE.—Construction work will begin immediately on a quarter million dollar tourist hotel, which, when completed, will be the finest tourist hotel in the state. The structure will have 101 rooms, all with bath, and will be equipped and furnished in the most modern fashion. The hotel is being erected with a view to filling a long-felt demand for a beach resort hostelry at that place to take care of the rapidly increasing tourist business. It

will be completed and ready for occupancy early next spring.

MARSHFIELD, ORE.—The Lignacite Fuel Company, with headquarters in Portland, which was recently incorporated with an authorized capital of \$250,000, is to build a plant at Coos Bay to develop the Diers fuel system, according to announcement. H. C. Diers of the new company has given out no information, except that the concern is under contract to build its first plant on Coos Bay, at an estimated cost of \$150,000, to develop the system and manufacture both metallurgical and domestic fuel from coal and mill wood waste.

MADRAS, ORE.—A new tariff granting increased rates for lighting and power service furnished by the Dechutes Power Company has been approved by the Public Service Commission and became effective July 1. The new schedules provide for an increase in residence lighting, commercial lighting and power rates while the rate for electric heating in connection with an electric range has been reduced from \$5.00 a kw. per month to \$3.50 per month. The new rates effect the towns of Madras, Culver, Redmond and Prineville.

MEDFORD, ORE.—An electric company is to be formed in Medford, according to report, by J. T. Gagnon, a local timber, sawmill and traction man who has decided to generate power to operate his Medford and Jacksonville mills and his electric railway line. A boiler and generator will be installed at the mill in Medford. Mill refuse will be used for fuel to operate the plant. The fare on the street car line between Medford and Jacksonville operated by Mr. Gagnon has been cut to 5 cents to stimulate travel between the two towns and to meet jitney competition.

PORTLAND, ORE.—A franchise has been granted by the city council of Portland to J. B. Schaefer and others to operate a street car line from Portland to Linnton, a remote district lying within the city limits. The new line will make use of a considerable portion of the old United Railway's track, long out of commission. In addition, about six miles of new trackage will have to be constructed. The new line, which it is proposed to finance by sale of stock to the residents of Linnton and the business men of Portland, will give the Linnton district, which is an important industrial center, a much needed transportation service.

ROSEBURG, ORE.—A special election to determine the amount of interest to be paid on bonds for construction or purchase of a municipal light and water plant has been set by the city council for November 1. City voters recently authorized a \$500,000 bond issue for the construction of a municipal light and water plant, but it is now deemed advisable to purchase or condemn the present plant and use the distribution system. In order to sell the bonds under the present conditions of the bond market it will be necessary to increase the interest rate and this will be put up to the voters. The bonds authorized by the people are to bear interest at the rate of 5½ per cent and can be used for original construction only. It has been suggested that the ordinance be changed or amended to allow the purchase of the present Douglas County Light & Water Company's plant.

PORT ANGELES, WASH.—The Northwest Power & Manufacturing Company of this city has started construction on a new 4,000 horse power hydroelectric plant, estimated cost being \$300,000. The capacity of the present plant, located on the Elwha River, five miles west of Port Angeles, is taxed to its capacity by the new industries located at Bremerton, Charleston, Port Angeles, Port Townsend and the Bremerton navy yard.

THE PACIFIC CENTRAL DISTRICT

MARYSVILLE, CAL.—The Yuba Manufacturing Company has secured the contract for building three large dredges.

RICHMOND, CAL.—It is understood that work will start in the near future on the proposed Proctor & Gamble plant.

OAKLAND, CAL.—The Severin Motor Car Company of Kansas City is arranging for the construction and operation of a factory in this city.

FULLERTON, CAL.—Contract for the installation of ornamental street lighting posts has been awarded to the Southern California Electric Co.

MADERA, CAL.—The sale of \$28,000,000 worth of irrigation bonds to provide for the Madera Irrigation Project was authorized at an election held July 26th.

FRESNO, CAL.—Plans for the installation of new machinery and the enlargement of the storage capacity of the Central California Ice Company's plant have been announced.

FRESNO, CAL.—The San Joaquin Light & Power Corporation is to build a combined office, warehouse and garage building to cost approximately \$20,000 at San Joaquin this fall.

RIO VISTA, CAL.—The Pacific Gas & Electric Company is constructing a 4,000-volt power line to supply the farmers on West and Donlon Islands and Reclamation District No. 341.

FRESNO, CAL.—Batchold & Son, proprietors of the Selma Flouring Mill, which was destroyed by fire in May, have commenced reconstruction of a two-story, fire-proof cement block mill building.

OROVILLE, CAL.—Reclamation District No. 833, situated in the Gridley District, has filed with the supervisors a plan calling for future construction work to cost \$700,000. This will consist of canal and drainage work.

SUSANVILLE, CAL.—The Tule and Baxter Creek irrigation districts have signed a contract with Leon Bly for the construction of the Eagle Lake irrigation system. The irrigation bonds have been validated and are now advertised and will be sold August 20.

SELMA, CAL.—The business men of this city have subscribed over \$21,000 toward a home building program which is intended to relieve the local house shortage. The homes to be built will be purchased for 10 per cent down and 1 per cent of the purchase price per month in payments.

FRESNO, CAL.—An organization for the purpose of developing a power and irrigation project at Squaw Valley was undertaken here. The proposed reservoir will develop power ranging from 50,000 hp. five months from September to February to 188,000 hp. during April, May and June.

ALLEGHANY, CAL.—A large amount of new machinery and equipment is being delivered here during the season of good roads. Two mines, the Rainbow Mine and the Sixteen to One, are installing new equipment and air compressors and planning for extensive underground operations.

BERKELEY, CAL.—Funds will be available in the Fall for the erection of several notable buildings at the University of California. The Henry Morse Stephens Memorial Hall, the New

Physics Building and the Haviland Hall for the School of Education and the athletic stadium are among those planned.

FRESNO, CAL.—The San Joaquin Light & Power Corporation has obtained authority from the Railroad Commission to issue notes and prior preferred stock to the San Joaquin Valley Farm Lands Company for the purpose of bringing power for pumping water to the Tranquility Irrigation district and the James Irrigation district.

THE PACIFIC SOUTHWEST

ALHAMBRA, CAL.—The development of a larger water system is being considered by the City Trustees. New pumps are to be installed and other work carried out.

SANTA BARBARA, CAL.—A proposition that the Montecito district be permitted to buy a partnership interest in the Santa Barbara water system has been presented to the City Council.

LOS ANGELES, CAL.—A new office, warehouse and storage sheds will be built immediately by the Oil Well Development Company on property recently purchased at Fiftieth and Santa Fe streets.

LOS ANGELES, CAL.—Los Angeles Gas & Electric Corporation plans many improvements in coming years. New machinery is to be installed, and many new mains are to be laid. Improvements estimated at \$5,855,000.

SAN DIEGO, CAL.—The Mexican Government has announced plans for the building of a string of modern lighthouses along the Lower California coast, the first one to be erected on Coronado Island, 12 miles off this port.

STRATHMORE, CAL.—The Strathmore Co-operative Association has commenced excavation on Santa Fe right of way in Strathmore for the erection of packing house building to cost \$40,000. P. E. Stark will be manager.

EL SEGUNDA, CAL.—The matter of enlarging and extending the water system is still under consideration here. A report of the survey and estimate is expected to be made by Engineers Olmsted & Gillilen not later than August 15.

LOS ANGELES, CAL.—The Western Glass Products Company has purchased a site adjoining the American Aluminum Metal Products Company and the Empire China Factory at Burbank, Cal., and contemplates the erection of a factory.

FULLERTON, CAL.—Fullerton will spend \$280,000 for city water extension system—16 miles of cast-iron mains and a 5,000,000 gallon reservoir are included in the specifications. Plans will be completed by the time the bonds are sold.

LONG BEACH, CAL.—George Zeeman, president and general manager of the Asphaltum & Refining Company of Los Angeles, announces that plans are under way for the establishment of a refinery here to convert Signal Hill oil into gasoline.

FALLBROOK, CAL.—Fallbrook proposes to bond a modern system of irrigation from the San Luis Rey River to make available several thousand acres for citrus and other semi-tropical fruits. The river system will be supplemented by driven wells.

LOS ANGELES, CAL.—Plans for a Los Angeles branch factory of the Wayne Knitting Mills of Fort Wayne, Ind., are being prepared and will involve an expenditure of \$500,000 for the erection of brick, steel and concrete buildings and for equipment of machinery.

SANTA BARBARA, CAL.—J. E. White, consulting engineer of Santa Barbara, states that plans are under way for the establishing of an adequate water supply for Summerland. Ten-

tative plans have been made for formation of a water district, which will include this town.

LOS ANGELES, CAL.—The C. C. Brown Candy Factory, 621 So. Olive Street, has acquired a 99 year lease on property on the west side of Flower Street just south of Seventh, and plans are being prepared for a three-story building to be erected on same. The building is to be 60x165 ft. The investment is estimated at \$75,000. The first floor is to be used by a retail department store, the upper floors to be occupied by a factory. T. Beverly Keim is the architect.

LONG BEACH, CAL.—Application to build a \$750,000 drawbridge across Long Beach Channel at Los Angeles Harbor, was presented to Major A. D. Ardery of the U. S. District Engineer's office. With no protests at the hearing, the permit is expected in a few days.

DOWNEY, CAL.—Sealed bids will be received up to August 23 for the sinking of a well and the installing of a pumping plant on lands of the district about one-half miles south of Rivera, Cal., in accordance with plans and specifications on file in the office of the Board of Directors.

LOS ANGELES, CAL.—The Austin Company has secured the contract for a new factory building in Los Angeles, to house the Angelus Sanitary Can Machine Company. A new capping or closing machine, with a speed of 200 cans per minute, without solder, will be manufactured in a section of the new factory.

THE INTERMOUNTAIN DISTRICT

WELLS, NEV.—The Interstate Commerce Commission has granted permission of the construction of a railroad connecting Rogerson, Idaho, with this city. The road is 90 miles in length and will form a means of communication from southern Idaho to the Pacific Coast.

SALT LAKE CITY, UTAH.—Zion's Co-operative Mercantile Institution, the largest department store in Utah, and one of the largest in the West, has let contracts for the construction of an addition to their building, which will cost \$100,000. Work is to be started immediately. The addition will be four-story and basement, fireproof construction.

SALT LAKE CITY, UTAH.—Articles of incorporation and by-laws of the Lincoln Paint & Color Company, a Nebraska organization, have been filed with the Secretary of State. The company proposes to engage in business in Utah and will carry on the manufacture of and jobbing in paints, oils and leads. Its capitalization is \$200,000. William Werrett Jr., is designated as agent of the corporation in Salt Lake. The secretary of the company is F. L. Knapp.

TWIN FALLS, IDA.—Installation of a new street lighting system, to include erection of 108 ornamental curb lights along Main avenue and Shoshone street, has been authorized by the city council, and revised contract with the Idaho Power Company covering the work has been approved. Installation is to be done by the power company under the supervision of R. E. Bobier, supervising foreman of operations for the city. The material for the system has been on hand for some time.

OGDEN, UTAH.—The new Ogden plant of the Pacific Fruit Express Company has just been placed in operation. Built at a cost of \$500,000, the Ogden plant compares with the best on the system. With the new plant operating at Ogden, the plant formerly operating in Evanston will be discontinued. A plant similar to the one at Ogden will soon be opened at Laramie. Facilities for the icing of 100 cars at one time are features. The new Ogden plant has a storage capacity of 20,000 tons. Electric power is used in the operations of the plant.



PEOPLE WE AVOID

The man who tells you how he would have conducted the war.

The man who carries his umbrella under one arm with the point sticking up behind.

The man whose friends are always being operated upon.

The man who hasn't missed a day's work in thirty years.

The man who has just sold his house for twice as much as he paid for it.

The man who thinks it is everyone's duty to "keep fit."

The man who is convinced you take yourself too seriously.

The man who has just bought a new car.

* * *

Conventions inspire conflicting emotions in the breasts of delegates, depending on whether they won or lost at poker. One sour misanthropist has produced the following essay on the subject:

A Convention consists of a large room full of a lot of tobacco smoke, a gavel, the man-whom-I-take-more-than-ordinary-pleasure-in-introducing-to-you-today, and a few auditors. The auditors are especially necessary to the convention. Auditor means listener. As auditors most conventionites are good sleepers. Also, most regular conventionites are expert golfers—African Golf.

Another thing especially important about a convention is the committees. There is a constant demand for committees of all kinds. A committee is something than which there is nothing than-whicher, or less than that, even. The most important committee is usually the law committee, which admits all members in good standing to the bar. Which is good standing.

After all the committees are teed and all the orators are torn, there is nothing left but for the convention to adjourn. Journeying is the best thing they do.

* * *

ITEMS FROM OUR DAILES

Canal Freight Shows Heavy Drop

But as there were no eggs or glassware in the consignment, the damage was very slight.

Believe Dead Woman Jumped From Train

A case of reflex action, presumably.

* * *

Rainfall is a complex subject, and one upon which no two people—especially farmers—ever agree. It is however, difficult to disagree with the luminous remark of the Irish farmer (doubtless inspired by the present drought in England) who said:

"An hour of ut now will do more good in five minutes than a month of ut would do in a week at anny other time."

* * *

WORK

According to some profound thinker there are eight days in the week—Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday, and Tomorrow.

Some people work on the first six and rest on the seventh.

Some rest on the first seven and do all their work on the eighth.

At the same time the eighth day workers are apparently the only ones who are really safe, as an encounter

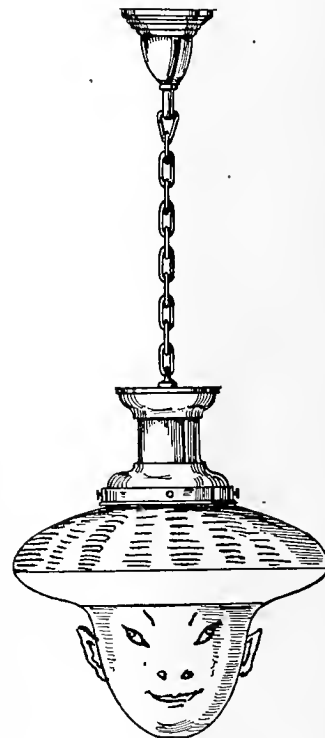
between two of them indicates. A bored-looking tramp approached one of the Arrived with the usual request.

"See here," said the prosperous one, "with all the work there is to do, how comes it that you are bumming? If you don't work you cannot expect to eat—not these days."

"Mister," answered the weary one, "my father died of work, my brother was hurt looking for work, my sister fell off a car coming from work, and I ain't going to take no chances."

* * *

ELECTRICAL HYBRIDS



IX—The Fixt-eur-asian

The Fixt-eur-asian's habits
Are as shy as any rabbit's,
Yet his shining face can drive away the gloom;
In celestial position
He's a very great addition
To the cheerfulness of any kind of room.

Where his home is he's a fixture,
And he's somewhat of a mixture,
For by daylight he is hardly seen at all;
But at night his face is lighted
Up and everyone's delighted
To see him hanging 'round the parlor wall.

Journal of Electricity and Western Industry

25 Cents a Copy

September 1, 1921

San Francisco



The location of
"The House that SERVICE Built"
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Company gives to its customers—Central
Stations, Dealers and Contractors,
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Wet "	80000	90000
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ROBERT SIBLEY, Editor

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Journal of Electricity and Western Industry

A semi-monthly chronicle of western events, advocating the economy, efficiency and convenience of electric power for all industries of the West—manufacturing, agricultural, mining, merchandising, home building and home making. Interpreting the value of electrical development to the business and financial man, the industrial man, the power man, wholesaler and retailer, contractor and constructor, engineer and home owner.

Because of the abundance of water power in the West susceptible of economical development, a dependable, uninterrupted supply of cheaper electric power is assured for these industries. The basic industry of the West—hydro-electric power generation—for which Journal of Electricity and Western Industry is the spokesman, is therefore logically and inseparably linked to the growth and prosperity of all phases of our daily life and business.

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THE ELECTRICAL INDUSTRY OF COLORADO FURTHERS THE WESTERN COOPERATIVE MOVEMENT

1,485,000 inhabitants of the Western States are consumers of electricity and over one billion dollars is invested within this territory in the industry which gives them service. In order that these million and a half people who are prospective purchasers of lamps and electric home equipment might be better served, a Western cooperative movement was started in 1918, financed by all branches of the electrical industry, intended, through education, to bring about this end. The success of this movement in creating public good will and in bettering feeling within the industry as well as in the wide spread

introduction of better merchandising methods, has led other districts of the West to take up the idea, originally started in California, and we now have successfully operating electrical cooperative organizations in the Intermountain and Northwest districts, as well as in Vancouver, B. C. With this get-together dinner of the recently organized Electrical Cooperative League of Denver, held August 4, Denver inaugurates a survey of conditions in the electrical industry of that district which places it definitely in line with this progressive work.

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The PIRATE

In the days of old, there was many a freebooter on the high seas who enjoyed a very profitable trade in bullion and Jamaica rum at other men's expense. For a while, this was regarded as almost a legitimate occupation and there are many strange tales to be read in musty books of old swashbucklers who were part of the time pirates and part of the time honored supporters of his majesty of Spain.

In one sense the days of piracy are not yet dead. On another page of this issue is published a letter to the editor under the title, "Pacific Coast Markets for Pacific Coast People." At first sight such a title looks narrow—but there are times when it is quite proper to speak the truth and speak it plainly. The West is a new country and those who are of the present generation in its industries are its builders as well. There has been much pioneering work to be done—and if the result is commendable, if good business methods have been built up, if good will has developed good markets and if (as it may fairly be said that it does) the West stands today for business opportunity, it is because that pioneering work has been done unselfishly. Men have been willing to reap only where they have sown—more, they have sown without reaping for many years in order that their future harvests might be great. It does not seem right that those who have not contributed to

this preliminary work, should, by selling goods at lower prices, gather in the best of the business. When a farmer breaks ranks in a cooperative organization, taking advantage of the higher prices made possible by the higher standards set by the union, but slightly underselling his fellows by lowering the grade of his product, thus spoiling their markets, he is not popular. Nor is he who comes West and noting satisfactory public relations established through the "quality service" ideals appearing in this region, sensing the value of our organized cooperative efforts and the publicity being carried on through activities of the technical press, fails to contribute anything to the carrying on of this foundation work, but at the same time eagerly sets out to share in its rewards. In that he is taking something for which some one else has paid, he is a pirate and in spite of the legitimate appearance of his other calling is in some measure related to the brass cannon and Jolly Roger which terrorized the seas of old.

There is no legal recourse from these methods, but such conduct brings its own punishment in the form of public condemnation—if it is understood. The matter is here brought to light that it may be understood more clearly and that public opinion may become more crystallized against such practices.

The Need of a Fundamental Basis for Taxation

IN popular opinion, the fundamental requirement of a system of taxation has been that it should be painless. For this reason, the public seems to prefer to pay government taxes disguised as meat bills and railway fares and to call them the high cost of living. Following the same line of argument, some of the economists of our state legislatures in the West have hit upon the happy idea of charging all state bills to incorporated business, letting this branch of industry recoup as best it may by charging higher prices for its various commodities.

It may be asked—if the public prefers to pay higher rates for water, gas and electricity, why not let them? Business will adjust itself to any conditions you may wish to impose upon it. The answer is that, although it may so adjust itself temporarily, no system which is based upon an injustice can be permanent. If one line of business or form of organization is placed under a handicap, some other which is not so hampered is going to rise up in competition and endanger the life of the overburdened enterprise.

The present agitation in favor of public ownership of public utilities is in large measure due to the fact that municipalities would not have to pay state taxes and that their bonds would be tax exempt—in other words it is a reaction against an unwise tax system. Let us recognize this element in the situation—and if we wish to revise our methods of state finance, choose some way which will have less disastrous consequences to state development.

Pacific Coast Division N. E. L. A. For the Entire Industry

DURING the recent convention of the Pacific Coast Division, N. E. L. A. there was a general move toward doing away with the special emphasis upon central station interests which has persisted from the origin of the association. The western attitude in all matters electrical is one of cooperation and all four branches of this great industry have long worked together toward the solution of common problems. The move toward a more general sharing of responsibilities and offices is merely a public acknowledgment of the existing interdepend-

ence of power company and merchandiser. The time has come for the complete opening up of the executive committee and the offices of the Association to all branches of the industry equally.

The Principles Behind the Greater Service Idea

IT has recently been said by H. G. Wells that when complete cooperation is finally attained in any field, then the human endeavor which worked toward the attainment of that particular point of perfection, dies. And any organization which finally achieves those ends which it has set as its goal is headed for stagnation and dissolution unless it casts aside for new ideas and new suggestions which will enable it to continue to grow.

Elsewhere in this issue, A. W. Childs of the Southern California Edison Company sets forth the remarkable activity in the field of Greater-Service which his company has instituted during recent months. It might seem that such intensive effort was unnecessary on the part of a power company which already had established enviable good will conditions with the public which it serves. But it would be a dangerous policy for any public utility to rest on its laurels.

Jack London, in his "Valley of the Moon," states that a woman, in order to hold her husband should unfold each day a new charm, thus holding his interest and sustaining a belief which is otherwise a difficult thing to maintain in any object which is finally seen through.

The same principle holds true in more prosaic matters—and those who today have the burden of formulating the vision for the public service industry must constantly unfold new ideals, new plans for greater helpfulness to the people, new attractions to hold their attention. The Greater-Service idea as put into practice by the Southern California Edison Company is a symptom of healthy growth—a state of affairs which the public are always quick to appreciate.

Applying the Principle of Truth in Publicity

A GREAT deal has been said in recent months on the subject of truth in advertising. In spite of the familiarity of the term, little actual thought has been given to the question of absolute truth in publicity pertaining to modern commercial and industrial development. This particularly applies to the daily press, and the electrical industry as well as industry generally should be scrupulously careful of statements made through that medium to see that they represent whole truths. The Inman Investigating Committee of California brought forcefully to light how practically all the misunderstanding which had arisen in California on the utility situation is due in the main to the fact that the people have been misinformed. Not a little of the public confusion was traceable to half truths offered through advertisements and news stories, although at all times the whole truth would have been far better.

Leaders of industry should see to it that every title in publicity which appears in the press should tell truthfully what is in the article. It should tell it in an attractive way, but should not announce something other than the chief feature of the article, and the facts embodied in the message should be set forth without exaggeration. The West is able to present its cause without effusive words or undue emphasis upon facts that of themselves speak the truth. Over-exaggeration destroys confidence in the message. We shall do well, in coming months to see to it that truth in publicity is maintained in every item, article and expression that goes forth to the public.

Why Not a Community Chest for Putting Over the Electrical Idea?

CONSTANT demands in various cities for contributions for forwarding the many phases of the electrical idea, are proving annoying, and in some instances are bringing about a cooling of electrical ardor that is quite undesirable. Why not the community chest idea in the electrical industry? Certain it is that there must be some better thought given to just what drives and activities are to be undertaken by the industry as a whole, so that the campaigns, industrial exhibits, charitable drives and other plans that are endorsed, may be put through in an orderly, dignified and systematic manner. By far the best support and cooperation may be secured under the community chest plan, by which a definite budget is provided to accomplish definite results without frequent unforeseen calls being made for unauthorized activities.

Standardization for Pumping Plants

THE ever increasing load for pumping plants in the West is amazing to all beholders. Let us cite a single instance to illustrate this increase. The acres of land irrigated in California in 1910, according to the United States Census, were 2,354,970. In 1920 this acreage was increased slightly to 2,596,207. The portion of this acreage, however, irrigated by pumping in 1910 was 309,134 acres, while in 1920 it had progressed to the enormous total of 1,470,000 acres. Here is a silent but powerful testimony to the ever increasing share performed by the electrically operated pump in reclaiming of the West.

In the evolution of the electric pump it is quite easy to understand how motor standardization is sorely needed at the present time. The question of the externally operated switch, the installation of lights in the pit and in the pumping station itself, method of wiring and various other features, are matters of great current concern in the West. The recent meeting of the Southern District of the California Association of Electrical Contractors and Dealers at Catalina undertook to inaugurate a movement whereby this standardization may be

started, and to this end a committee has been appointed to cooperate with the engineering committee of the Pacific Coast Division, N. E. L. A. to bring about complete standardization specifications for installation of the electrical pumping plant.

Certain of the designs now in vogue will be published in early issues of the Journal of Electricity and Western Industry in order that readers generally may see some of the outstanding features that are at variance.

Hotel Sharks Have no Place in the Upbuilding of the West

GREAT complaint has been heard in many parts of the West because the Hotel Utah, Salt Lake City, virtually doubled its prices during the recent convention of the American Institute of Electrical Engineers recently held in that city. There is one thing certain, and that is that men of the industry throughout the West will not tolerate such a situation as this again. We are all builders and we are endeavoring to build a West of square and fair shooting, a West befitting the hospitality that has been passed down to us from the days of '49, and hotel managers should have a place in this great work. In the conventions of the coming year in which industrial and electrical men are to take part, the Journal of Electricity and Western Industry will do everything possible to give publicity to any hotel or combination of hotels that endeavors to raise rates at the time conventions are held.

Western Business Conditions Enjoy Factor of Stability

THERE have been many opportunities within the past year for both individuals and communities to check up on their business standing. Under a trying period of world wide business depression, the West has shown up exceedingly well. There has been something more than the average unemployment in this region and certain lines of industry have curtailed their output, but those factors which serve as barometers to indicate the tone of the entire business market have remained remarkably stable.

Building activities have shown a steady enterprise. The Los Angeles achievement featured elsewhere in this issue represents the high peak of this region, but reports within the last month from all western states indicate that both home and industrial building have been active.

Western banking statistics are equally impressive. The Twelfth Federal Reserve District stands as the only District in the country which has not found it necessary to borrow from other districts within recent months. In short, the western states undoubtedly rank as the most prosperous section of the United States at the present time. A glance at the map and the newspapers will suggest that this statement might fairly be extended to a world wide compass.

The reasons for this are two. In the first place,

the average of per capita wealth in the West is the highest in the nation, which fact allows more of a leeway in the weathering of business depression before sails must be reefed. Moreover—and this is the more important factor—western enterprise is of a more varied nature than that which supports other districts. The South, for instance, suffers in every department when the cotton market drops; New England is almost wholly dependent upon the success of its concentrated manufacturing activities. The West, by contrast, has a wide range among its agricultural products and adds to this considerable activity along diversified lines, mining output, lumber, wool, hides—in fact, it supplies some measure of almost all the world's needs.

In other words, the present favorable position of the West is not the result of happy accident, but may be credited to a natural stability which gives gratifying insurance of similar prosperity under future trials.

Better Lighting Required In Our Educational Institutions

LIGHTING has quite often been more or less neglected in planning the modern educational institution, particularly in the student machine shops and other rooms of instruction where young men are being prepared to take part in the industrial life of the nation. Here is an opportunity to put in an industrial lighting exhibit that will bear fruit. One of the technical high schools in Pasadena, California, has already been so equipped, and much favorable comment has been heard concerning the good results that are being accomplished. Proper industrial lighting, we all know, pays real dividends. Here then is an educational movement that will contribute to the economic aim of the day, namely reduced cost of production and increased efficiency.

The Net Price vs. the List Price Plan

FROM time to time there has been a great deal of discussion throughout the West concerning the question as to whether electrical merchandise should be sold on the list price and discount plan or on the net price plan. It has been the universal practice in the past for manufacturing concerns to issue books setting forth descriptions of their ware with fictitious prices attached, known as list prices. From these fictitious or list prices it has been necessary by a process of discounts and cross multiplication to secure the actual cost of the material. One large manufacturer, The American Wiremold Company, of Hartford, Conn., now comes out boldly in favor of the net price plan, maintaining that it will eliminate mistakes, simplify quotations and estimates, and serve the greatest good to the greatest number. To men of the industry in the West this new venture will be watched with unusual interest. Aside from the simplicity involved, the very frankness displayed is one that will meet instant recognition on the part of the customer public.

Western Comment on Current Events

Editorial Notes and Readers' Views on the Outstanding Aspects of Financing,
Trade Promotion, Legislative and Associated Topics that have a
Special Bearing on Western Business

Electrical Appliance Sales Increase

Reports from California Territory Indicate Rapid
Growth in Demand For All Kinds of
Labor Saving Devices

That the business depression has had no apparent effect on the sale of electrical appliances in California is indicated by the phenomenal increase in sales during 1920, as compared with those of 1918. A survey has been conducted by D. E. Harris of the Pacific States Electric Company, and a list made of the various electrical household appliances showing the average increase of 1920 sales over those of 1918 in California. The list compiled by Mr. Harris is as follows:

Item	Average increase 1919-1920 over 1918
Vacuum Cleaners	180.7%
Chafing dishes	36.4
Curling irons	107.0
Immersion heaters	67.3
Air heaters	109.9
Radiant stoves	87.2
Disc stoves	93.0
Heating pads	26.5
Percolators	114.7
Lamp socket ovens	7.8
Toasters	134.1
Miscellaneous socket appliances	31.6
3-lb. irons	51.7
5-lb. irons	49.7
6-lb. irons	27.1
Miscellaneous irons	194.5
Laundry and tailor irons	102.4
Disc stoves over 600-watt	59.4
Ranges	16.2
Water heaters over 600-watt	77.4
Vibrators	67.5
Hair dryers	88.2
Drink mixers	27.1
Washing machines	351.8
Fan motors	10.0
Ironers	222.8
Sewing machines	47.2
Other household devices	142.8

These figures do not by any means represent total sales in the territory, being compiled only from partial reports, but it is reasonable to suppose that the figures are typical.

Much of this activity must no doubt be credited to the work of the California Electrical Cooperative Campaign, which started operations in 1918, and it is interesting to note that the largest increases recorded are in sales of vacuum cleaners, washing machines, irons, ironers, percolators, toasters and heaters—appliances which have usually been specially featured in the various "electrical home" displays. An important sidelight on the situation is the fact that, calculating from the limited informa-

tion received, the appliances sold would represent to the central stations 87,768 kw. for the year 1919, and 95,364 kw. for the year 1920.

Western Oil Fields Effect Economies

Greater Efficiency in Production Reported From
California Oil Fields Makes for Increased
Conservation of Resources

Figures given in the summary of operations of California oil fields recently issued by the State Mining Bureau show a marked increase in the efficiency of production by the various companies operating in California fields. The figures cover operations for the years 1919-20 and 1920-21 and show that efficiencies increased from 75% to 90%, from 81% to 92%, and so on, in the comparative production records for the two consecutive years. The figures are based upon the written reports issued by the Supervisor to operators in passing upon their oil well construction or repair work, throughout the state.

The efficiency with which these companies operate is of the utmost importance in prolonging the life of the California oil fields and relieving the tension of the fuel situation, and in practically every case the efficiency has markedly increased during the past year.

Northwest Lumber Problem Discussed

Taxation System and Fire Protection Held to be
Two Most Important Factors in Preservation
of Nation's Timber Resources

With fifty per cent of the remaining standing timber in the United States located in Oregon and Washington, the conservation of this resource becomes a national as well as a western problem, and the attitude expressed by the recent gatherings of lumber men in the Northwest is of national importance. At three conferences held in Seattle, Tacoma, and Portland, representatives of the National Lumber Manufacturers' Association and the West Coast Lumbermen's Association met with the National Forestry Policy Committee of the United States Chamber of Commerce and discussed the need for the formulation of a national forestry policy.

It was brought out that one of the most urgent needs is the adoption of a state taxation system which does not compel the timber holder to cut his

trees as rapidly as possible in order to safeguard his profit. The British Columbia yield tax system was cited as an example of proper protection of the holder of timber. This system imposes a fixed charge, say \$125 a section, with the government receiving stumpage when the timber is cut. It was stated that under present conditions private enterprise cannot afford to reforest and wait 50 to 60 years for returns.

The lumber interests as a whole expressed themselves in favor of some form of cooperation between the federal and state governments and individuals in working out a national forestry policy.

Western Research Center Established

**California Institute of Technology to Cooperate
With Power Company in High Voltage
Research Under Famous Scientist**

Announcement has come from the California Institute of Technology, of Pasadena, California, of the appointment of Dr. Robert A. Millikan now Professor of Physics at the University of Chicago as Director of the new Norman Bridge Laboratory of Physics and Chairman of the Executive Committee of the Institute. Dr. Millikan will take up his work in October, toward which an annual appropriation of \$100,000 has been guaranteed.

At the same time it is announced that the Southern California Edison Company will immediately erect on the campus of the California Institute a high tension laboratory where an extensive investigation on the transmission of power at high voltages will be made by the combined staffs of the company and the Institute under the direction of Dr. Millikan and Prof. Sorenson.

The double announcement is of tremendous significance to the technical advancement of the West. Every one is familiar with the important part played by the research work carried on at Stanford University under Prof. Ryan in making possible 220,000-volt transmission. Not alone the electrical industry, but, through the economies of operation made possible, every industry of the West benefited through the work there carried on.

There now promises to develop a most important research center in Pasadena. Dr. Noyes, who is regarded as one of the leading chemists of the world, is already a member of the California Institute of Technology faculty and the advent of Dr. Millikan thus brings together two of the greatest scientists of the present day. Extensive research work is planned in cooperation with the Mt. Wilson Observatory, which will be aimed at the problem of determining the constitution of matter.

The existence of such a research center in the West means much for this region, not only in the enhancing of an already enviable scientific record and the advancing of standards of technical education, a factor which is inevitably reflected in the local application of technical science, but also in the opportunity thus offered to western industries for cooperation in solving their technical problems.

Road Rule Involves Many Changes

**Adoption of Right Hand Drive in British Columbia
Necessitates Expensive Work on Street
Cars by Power Company**

With the close of the year British Columbia will change over from the left hand to the right hand drive. The move has the obvious advantage of putting traffic laws in the District in line with those of the Pacific Coast States, with whose interests and activities British Columbia is so closely united. At the same time the change will involve considerable trouble and expense, especially to the power company which operates the street railway system of Vancouver.

The British Columbia Electric Railway Company reports in this connection that its shops are working at maximum speed rebuilding street cars to conform to the requirements of the new road rule. Some of the work is proving both elaborate and expensive, on account of the cars being of various types. In many cases whole new fronts and rears have to be constructed, the wood not being able to stand reconstruction. Inside the cars some work will have to be done moving seats to opposite sides of cars, moving railings and so forth.

Public Utility Service Is Endorsed

**Extension of Power Company Lines To Serve New
School Supported by Ballot in Local
Election in Northwest**

By 437 votes to 110 the Toppenish district in Yakima County, Washington recently authorized the appropriation of \$3,000 for the extension of the line of the Pacific Power & Light Company to serve the newly erected McKinley schoolhouse. The circumstances of this event were unusual and of special interest. Previous to the construction of the schoolhouse a number of farmers of the district had applied to the power company on more than one occasion to extend a line into the district, but the company did not feel that the outlay was warranted.

When the new schoolhouse was erected and the question of a private power plant was under discussion, a number of residents of the district took the initiative in proposing to the school board that the school district should participate in extending the power company's line to the school house. The local authorities ruled that the scheme was legally in order, with the result that the question of power line or private plant was duly included on the regular school election ballot. A vigorous campaign was conducted before and during election, with the result that the measure was adopted by a considerable majority.

That the extension of a power company's line should be made the subject of a political campaign is probably unique in the records of rural development, and the incident is of particular interest as an indication of a community's attitude toward the service which its power company can render.

Letters to the Editor

PUTTING OVER A STOCK SALES CAMPAIGN

To the Editor:

Sir: In view of the various stock selling campaigns being put over, it may be of interest to others to know the details of the Los Angeles drive. On Monday, May 23rd, we pulled off a meeting that will long be remembered. There were 302 in attendance, and snap and a lot of jazz from the start.

Our organization is set up on military lines and already a lot of healthy competition exists between the different divisions, namely, manufacturers, contractor-dealers, and jobbers. Each division consists of seven teams of ten members each, making a total of 21 teams represented by 210 members.

At Monday's meeting we commissioned the officers of the Electrical Development Army. A bugle call sounded and our Secretary of War, Al Morphy, gave the command, "Forward March," when the officers, properly uniformed, with the band playing, filed in around the room in front of the speakers' table and then to an appointed position where they lined up and were commissioned in great style.

The officers had no more than been commissioned, when in rushed a bunch of news boys with the noon editions of the Los Angeles Herald, and Los Angeles Express, calling out,—"Evening Herald—Express—All about the Electrical Development Army—Colonel Booth Commanding."

Immediately following this, the jobbers' division sprang a surprise. Dave Pence, as cheer leader, jumped up on a chair and blew a whistle, which was a signal for the jobbers' division, represented by some 70 men, to stand up, put on special orange colored paper caps shaped like overseas army caps, on which was printed, "Jobbers' Division," and then gave the following yell:

WE, WE, WHO ARE WE? WE ARE JOBBERS OF L. A. C.
CAN WE SELL STOCK!
WE CAN SELL STOCK!
WE MUST SELL STOCK!
WE WILL SELL STOCK!
WHO? THE JOBBERS!

Immediately following the yell, the band struck up a march, a special banner was produced which read—"California Straight Ahead—The Electrical Industry Leading—With the Jobbers at the Front"—and a parade around the room was started. Between the whistles each man blew, the band, applause and all sorts of noise, the excitement ran high.

Following all this, the active command of the meeting was turned over to our newly commissioned Colonel, Percy H. Booth, who presided during the program.

The plan was set up on a smash drive basis to run until June 27th on similar lines to the Liberty Loan Drives. At each meeting each captain made a report which was tabulated upon big charts by divisions. This plan not only put each team in com-

petition, but the three divisions as well. A silver loving cup was presented to the winning team each week, which they hold until beaten by some other team. At the end of the drive the cup was presented as a permanent token to the team making the greatest showing for the entire campaign.

The officers of the Electrical Development Army all wore overseas caps with an emblem denoting their rank. The team members wore a large button, and in addition, small buttons about the size of a dime were given to each person subscribing for stock during the campaign. The wearing of the button indicated loyalty to the industry and the lack of one, a prospect for stock. The emblem used on the button was the emblem of the California Electrical Cooperative Campaign.

H. L. HARPER, President.

The Electric Club, Los Angeles.

KEEP PACIFIC COAST MARKETS FOR PACIFIC COAST PEOPLE

To the Editor:

Sir: I believe in the slogan "The Pacific Coast a market for Pacific Coast people," and while, at first blush, this might strike one as "taking in a lot of territory," I feel the proposition is justifiable on broad lines.

The Pacific Coast field is immense in area and very expensive to cover by genuine sales methods and I believe this field is the natural market for Pacific Coast business men who are making legitimate efforts to develop it. Pacific Coast people, according to my definition, and for the purpose of these comments, are men engaged in the electrical industry who have actually established themselves on the Pacific Coast, who have invested interests here and who can be found when wanted or needed to participate in any local moves of a constructive character, involving support through sacrifice of time and money. Such men are helping to make the Pacific Coast, giving the best that is in them for the advancement of the industry and the community, and they contrast very sharply with those who take what they can get but give back nothing.

This latter class we consider as exploiting what belongs to others and we do not hesitate to designate them as "poachers." While it will not solve our problem to merely post a "No Trespassing" sign, it will help a lot if each of us keep watch with a shot-gun for any trespasser we may catch attempting to go either over or under the fence instead of through the gate with the proper credentials. These poachers may be either manufacturers, jobbers or contractors, but, in any case, their game conflicts with the interest of our local people. Our central station friends fortunately do not suffer from these encroachments, but, in these modern times, are protected from ruinous competition in the districts which they respectively serve.

As to the poaching manufacturer, there is, first of all, the outfit which has no representation or investment in this market and never intends to, but, according to his idea of commercial economics, takes

the circular letter method of going after the business—with inferior material and low prices, and, more often than not, this type of trespasser is after the contractor or consumer direct, with no thought or consideration for the established channels of trade. We can properly classify such an operator as a "mail order pirate," and of all the nuisances in the game he is the worst.

Then there is another manufacturer, producing better material, who elects to save himself the expense of permanent representation or investment in this market, but who would keep jobbers and contractors lined up by means of an annual or semi-annual visit from his star salesman, who arrives armed with the latest Eastern dope, a bunch of good stories and the stereotyped campaign yarn (in reality, a veiled threat) concerning the demand he has stirred up among local contractors and consumers for his goods, which demand must be recognized by jobbers or else——well, we all know that story. His purpose is to coerce the jobber into a good stock order, sufficiently large to carry him along until the next visit, for this wily con-man knows very well that once the jobber's money is tied up in his goods, the jobber is going to get busy and dig from under and thereby become the active representative of said bunco-man until he can get back on the job in six months or a year and repeat. Year after year, all jobbers look alike to this bird, except that when reflecting over the results of his trip he chuckles to himself as he marks down some as bigger suckers than others.

As for the poaching jobbers, the worst actors are located in the big distributing centers of the East and Middle West. Their performances in this territory are strictly on a mail order basis and the bait, of course, is the cut price. They are much impressed by the term, "National Jobber" and trying to live up to this reputation by exploiting the whole country. We would not refer to such an operator as a jobber, but as a mail order house, except that some of the worst ones happen to be members of the National Electric Jobbers' Association, in good standing in their respective local communities—but not above the employment of an entirely different code of ethics in far off fields. They must figure that it is necessary to help preserve their local market and reputation, while it is all right to demoralize a distant market in which their reputation is not vital. This two-faced outfit is of particular annoyance to me and others similarly situated, because, often as not, he is distributing into this territory under his rotten plan standard quality materials, and this goes on right under our noses without any regard to the local line-up which manufacturers of such material may have in this territory. Whenever the market is weak and lower prices are impending, these pirateering jobbers, or mail order jobbers, put on a whirlwind campaign of circularizing in a frantic endeavor to unload before the expected break materializes.

Then there are those New York concerns who act as buying agents and bureaus of information

for their clients. They are neither manufacturer nor jobber but play an intermediate role which serves as a blind for people who are willing, if protected by secrecy, to violate the principles which they themselves profess to uphold. These scalpers are constantly doing harm to the legitimate industry and never any good. They have financial strength and tentacles which reach out in every direction.

As for the poaching contractor, we have had experience chiefly with the Middle West. He figures a set of plans for some Eastern architect friend and lands a large job on the Pacific Coast through his preference at the hands of the architect. Armed with his contract, he dispatches a foreman and some tools to the scene of action, while the contractor—the head of that firm—remains in his home office to obtain from various Eastern sources lowest possible prices on all material, which prices are then forwarded out to his foreman to be used for checking bids of Pacific Coast people. This foreman will talk about giving preference to local suppliers, but he doesn't mean it. He wants to buy his exact requirements for this particular job—no more, no less,—finish up clean with nothing left over and then make his getaway. In conducting his negotiations he expects and wants every one to cater to his ideas, which he alleges must be right because founded on Eastern practice. Suffering Moses! Do we have to tolerate an invader of that type?

While other cases might be cited, the above will answer as typifying the evil we must combat. The situation is bad now and if it gets worse, particularly as to the encroachment of outside manufacturers and jobbers, then our self-interest structure becomes more a dream than a practical reality. Self-interest is not vindicated when the only result of constructive work is to create business for others. The power companies on the Coast are good cooperators in all forward movements. Fortunately for them they are playing a sure thing, for, being protected from outside invasion, all increased demand for electrical energy in a given district accrues to the company serving that district. How different is the other side of the picture, which involves the manufacturers and merchandisers of electrical material—their only reward is a chance to compete with the outside invaders for the supply business incident to this new development. My contention is that all of the big buyers of electrical material in this section, whether jobber, contractor or power company, should stop, look and listen ere their habit of indiscriminate purchases shall have shot to pieces the local cooperative line-up that has cost so much time, effort and money to establish. The test to guide these buyers should be: What is the constructive record of this seller who is asking for my business; what does he give back to the industry for the profit he expects to take from it; is he a local builder or a transient burglar?"

GARNETT YOUNG,
General Manager.

Garnett Young and Company, San Francisco

Builders of the West

ONE of the electrical appliances which has yet to receive the recognition due it is the electric range, which will in the near future become as widely used as the electric vacuum sweeper or the electric iron. The history of the development of the electric range reads like one of the Alger books where the hero, poor but proud, keeps on trying until at last, after overcoming all obstacles, he wins out and saves the old homestead by paying off the mortgage at the eleventh hour. The one man responsible for the electric range is George A. Hughes, who had an idea and refused to give it up in spite of the oft repeated assertion by electrical engineers that his idea was impractical and impossible.

George A. Hughes was the son of a lawyer, but apparently the legal profession with its delving into musty tomes did not appeal to the lad, who started his business career as a cub reporter on the daily newspapers in St. Paul and Minneapolis. From the task of chasing down the vital statistics and running after the ambulances and fire engines he evidently showed

real talent for he was soon sent to Fargo as a representative of the St. Paul Dispatch. That one move probably lost the newspaper business a real editor, but it gave the electrical industry a man with a vision and the bull dog ability to stick with a thing he believed was possible until he had accomplished it. At the time he went to Fargo that city was suffering from an overdose of a public service corporation that ran on the policy of "the public be damned." What service there was, was bad, and the rate of 30 cents per kilowatt-hour would make a present-day public utility commissioner shiver with delight. Sensing a business responsibility, the young reporter went before the city council and asked for a competitive franchise. Needless to say he got it, and with the aid of his father, Alexander Hughes, who for some years had been legal representative of the Northern Pacific Railroad in North Dakota, succeeded in interesting some business men in the proposition. The plant was built, real service and fair rate for electricity were given, and the other plant, inefficiently managed, was, as it should have been, forced out of business.

Having met with success in this venture, George Hughes abandoned the newspaper game and started a company to build municipal electric light plants and operate them under a franchise. Several of these plants were installed in Mon-



GEORGE A. HUGHES

President of the Edison Electric Appliance Company, Inc., whose work in the early days of Montana helped to better the power industry of that region and laid the foundation for the development of the electric range.

tana and the Dakotas. In the back of his head George Hughes had an idea that an electric range could be built that would be satisfactory. Some small electrical appliances, not requiring a heat greater than 600 degrees Fahrenheit, were being put on the market at this time, and Hughes was continually experimenting to see if it was not possible to find a metal which could be made into units to stand a higher temperature. Several different metals and alloys were tried out, and in 1910 at an electrical exposition in St. Louis he exhibited an electric range, made from an oil stove, with an open unit which appeared to have the required properties.

Through the trials and tribulations of an inventor seeking financial assistance Mr. Hughes kept busy trying to find still more satisfactory metals to use in the construction of the units on the range. After the exhibition of his crude range at St. Louis Mr. Hughes returned to Chicago, where he had made his headquarters, and began to turn out ranges. The question of finances was always troublesome, and sometimes it looked

as if the plant would have to shut down on account of the lack of supplies. But about that time a check would come through for some ranges, more supplies would be bought, and the work would go forward again. Improvements were made from time to time, and soon the ideal metal of which George Hughes had dreamed so often, made its appearance in the form of an alloy of nickel and chromium which had been discovered by an American engineer who had been looking for a suitable metallic compound for automobile bearings.

Since the time that crude affair which was the first electric range was put on exhibition in St. Louis, the electric range has passed the experimental stage and is now in the front line of those electrical labor-saving devices which are making the home life of the American woman more congenial. That it is practical is shown by the fact that there are many apartment houses which are entirely equipped with electric ranges, besides the thousands of homes throughout the country which are so equipped. The future of the electric range is assured, as is the comfort of the American housewife.

For his vision, his determination and perseverance, which gave to the electrical industry and the people of America the first practical electric range, this issue of Journal of Electricity and Western Industry is affectionately dedicated to George A. Hughes.

Greater-Service Department Idea Helps to Win the Public

Southern California Edison Company Inaugurates Extensive Service Department to Improve Public Relations Through Personal Contact with Each Customer at His Home

BY A. W. CHILDS

Superintendent of Sales, Southern California Edison Company

"In these latter days, any man who possesses the most ordinary capacity for observation has learned that in every kind of business, be it big or little, be it old or new, there is a universal thought in one direction, and that direction points to service."

* * *

"Good Service will yet embrace many attributes heretofore omitted, overlooked and for the present undreamed."—"Winning the Public," by S. M. Kennedy.

* * *

The Southern California Edison Company, cognizant of its responsibility to the public, and with a perception of the opportunity offered, has recently organized a new department to be known as the Department of Greater-Service. The organization con-

sists of approximately twenty-four experienced men who are specially trained for the work they are called upon to do. They are men of mature years, carefully selected and patiently schooled as to the company's organization, history, departments, operations and prospective developments.

the communities served—the idea being to create an interest in the company's affairs and to convey the thought that the work the company is doing is for the benefit of the territory supplied and that the more rapidly the company's business grows and develops, the more rapidly will Southern California progress in its onward march.

3. To obtain the mental attitude of each consumer interviewed—the idea being to find out if the consumer is (a) in accord with the company's operations and prospective development work; (b) if the consumer is indifferent to what the company is doing; (c) if he is in any way antagonistic to the company.

4. Assuming that the conditions under (1), (2) and (3) are satisfactory, the representative of the Department of Greater-Service will explain to the consumer the company's plan for customer-ownership and its desire that all consumers, if it were possible, should become personally interested in the company's operations, even if only to a minimum amount.

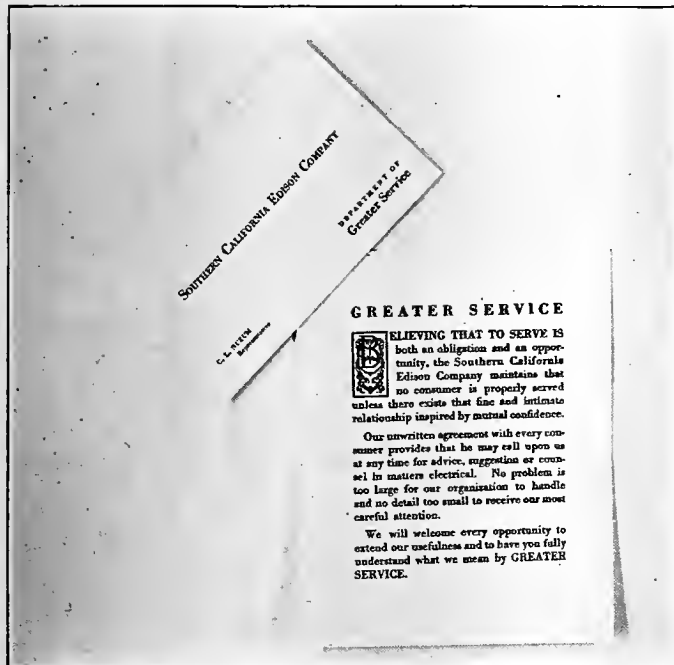
The information being gathered by the representatives of the Department of Greater-Service is proving of much value to the company in establishing a closer contact and better relationship with the individuals to whom the service is supplied. Complaints regarding service are reported by the representatives and the company sees that the complaints have prompt attention and that the trouble is immediately remedied.

Meeting the Individual Problems.

No attempt is made by the Greater-Service representatives to race through this work. Each consumer called upon is interviewed in a courteous and tactful manner and given all the time that is necessary in order to express his views and to receive such information as he may desire.

It is distinctly understood by the representatives that the work of the Department of Greater-Service is a departure for the express purpose of improving the service and increasing good will and that the explanation of the company's plan of customer-ownership is only incidental.

The business card of the Greater-Service representative folds and on the inside the following explanation appears:



The business card which the representative leaves behind him carries the message on its inner surface.

The work of the men in the Department of Greater-Service is fourfold:

The Scope of the Department

1. To inquire from each customer whether or not the service supplied by the company is satisfactory in every respect. This refers not only to the physical service, but also to the customer's relations with meter readers, collectors, troublemen, clerks, telephone operators and such other employees of the company with whom he may come in contact.

2. To give consumers, where the information is needed or desired, details regarding rate schedules and methods of charging for service, the welfare work carried on by the company in behalf of its employees, and the present and prospective development work which is carried on for the benefit of

BELIEVING THAT TO SERVE IS BOTH AN obligation and an opportunity, the Southern California Edison Company maintains that no consumer is properly served unless there exists that fine and intimate relationship inspired by mutual confidence.

Our unwritten agreement with every consumer provides that he may call upon us at any time for advice, suggestion or counsel in matters electrical. No problem is too large for our organization to handle and no detail too small to receive our most careful attention.

We will welcome every opportunity to extend our usefulness and to have you fully understand what we mean by GREATER SERVICE.

The representative carries a supply of folders on the following subjects and after interviewing the customer, leaves with him the folder containing information best suited:

Who Is The Edison Company—explaining that the Southern California Edison Company is owned by more than 17,000 stockholders, most of whom are residents of Southern California and represent every walk of life.

24 Hours Every Day—8,760 Hours Every Year—the purpose being to so inform the consumer regarding electricity and its application that he may use it advantageously day and night any moment in the year.

Edison And Its Partners—The Electric Utility supplies a public need so it should have the Public as its partners.

The People's Project—When the people understand that Southern California can only go ahead so fast as power is available, and when they appreciate that every dollar they invest in the securities of the company brings additional dollars to be expended in labor, material and merchandise, and for the upbuilding of those things essential to the doubling and trebling of the population, they cannot fail to realize that this is indeed the People's Project.

During a period of two and one-half months, ending June 15th last, 12,702 consumers were interviewed. Of this number 12,140 upon first interview were found to be in accord with the company's policies, 512 consumers were indifferent and 50 consumers were more or less antagonistic.

Representatives Report Good Reception.

The following extracts from representatives' reports are typical of the opinion of consumers regarding the company's service and policies:

"Thinks policy of development fine."

"Said, 'Your service is so good that we never think about you.' Very friendly to company. Saw its relation to industry."

"Service is fine. Bills a little high. O. K. after explaining."

"Believes the community well served. Years ago had considerable trouble, but lately everything very satisfactory."

"Fine treatment always. Splendid company."

"Wanted to know if company was afraid of competition was the reason for looking after its customers."

"Very friendly. Fully aware of benefit to California from power development. Uses electric range."

"Our ideal of greater and greater service strikes responsiveness with this man who hitherto had never invested in anything in which he had not complete control over his money."

"Inclined to the feeling that our achievement had been overrated, and was generally skeptical. When I left he had conceded the hugeness and worth of our project, and has been changed to an attitude of highly satisfactory responsiveness."

"Everything is fine. Your men made a quick job repairing a wire that the storm blew down in front of my house."

"Service excellent. Service from everyone at office 100 per cent."

"Suspicious and rather critical of company at first. Left her in good frame of mind and interested in company."

"Had not realized with any definiteness the immensity of our present and future works. Sturdy booster now."

"Only trouble is need of convenience outlets."

"Was misinformed as to our position on many points. Fairly good opinion of company after visit."

"Admired the aggressiveness with which we pushed our project and agreed we merited popular support."

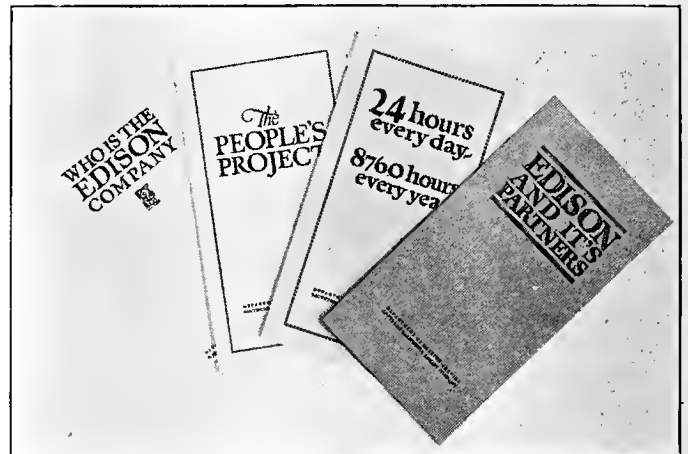
"Thought it made no difference whether he had complaint or not, as far as company was concerned. Spent about 45 minutes with him and he changed his opinion of Edison Company. Thanked me for calling and explaining Edison policy."

"What few differences we have had mostly due to misunderstanding on my part." Complimented us on Greater-Service idea—"A new idea—and another big step forward."

Summary of Results.

After two and one-half months' work by the Department of Greater-Service, it was felt that a

long enough time had elapsed to get an idea as to the results obtained during that period, and what might be expected for the future. A conference of District



A supply of folders is carried by the Better-Service representative sufficiently diversified to meet the interests of any customer

Managers and Greater-Service representatives was called. Free discussion brought out the following:

The work so far has been very beneficial to the company. It is returning full value for every dollar spent.

Instead of assuming that the service is satisfactory because complaints are few, a census is taken to get the absolute condition of service and attitude of mind in each individual case.

The representatives have been received most cordially.

Indifferent consumers have been changed to hearty supporters and antagonistic consumers have been changed to friends.

The good impression made and important information imparted is being spread by the consumers.

The Department of Greater-Service is giving the people the information they need—telling them of the big things the company is doing and what it expects to do. This satisfies the desire for knowledge and paves the way to interest those who are really in need of information, to become partners and stockholders.

Complaints are searched out and remedied.

Educational work is as important as looking for complaints. The educational work is in the nature of missionary work, looking into the future, and is one of the very best ways of informing the consumer regarding the policies of the company.

The company, through these personal interviews, is finding out quite a number of things that are helpful in many ways, and that start new ideas.

The Department of Greater-Service is doing an individual work that other departments of the company are unable to do. Were it not for this new department, the work would to a considerable measure be left undone.

The District Managers and Greater-Service representatives are very enthusiastic over the work. The idea of Greater Service is permeating the entire organization and creating an individual desire to "keep up to the mark."

The more the man in the field is a point of contact with the company's consumers, and the consuming public is impressed with the company's desire to please and give a high grade service, the more important it becomes that everyone from the Manager to the boy who fixes the fuses be tuned up to a high pitch, with the feeling that he represents the company and is under inspection by the public.

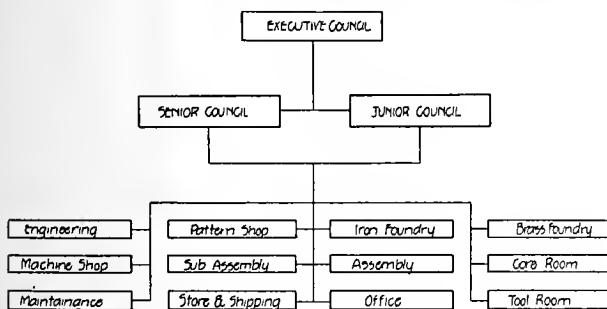
The operation of the Department of Greater-Service is not in the nature of a campaign or something that is temporary in its character. It is the intention of Southern California Edison Company to make the Department of Greater-Service a permanent institution and as such a part of the organization as is the reading of meters.

American Plan for Western Labor Works Out in Practice

Details of Employee Organization of One Industrial Plant of Oakland, California, Which Finds a Marked Reduction in Production Costs Through the Adoption of the American Plan

Believing that the solution of the labor problem in industry lies in the adoption of the American Plan and the handling of labor relationships within the industrial plant, the Standard Gas Company of Oakland, California, in June, 1920, adopted a program of plant management embodying these ideas. A constitution stating the principles and providing for the organization of plant employees was adopted and signed by every member of the company, from the president of the plant to blacksmiths and helpers.

The organization is popular with employees, and the management reports from its standpoint that



Details of plant organization as adopted by the Standard Gas Engine Company under the American Plan.

under the new methods, a saving has been noted on production costs, in some cases as high as 85%.

Constitution of the Organization of The Standard Gas Engine Company, Oakland California.

Preamble.

1. We, the Employees and Officials of the Company, in order to better working conditions, do proclaim our belief in and adherence to the following principles:

Americanism Justice Cooperation Economy Energy Service

2. Americanism in all that the word implies shall be a necessary qualification for all members of this organization.

3. Justice in the widest sense shall be the basis of our dealings, whether among ourselves individually or as an industrial organization dealing with its individual members or with those from whom we buy or those to whom we sell.

4. Cooperation is necessary to attain the greatest results as individuals, and, as an institution; therefore, we must pull together, and freely, cheerfully and willingly work in the spirit of harmony.

5. Economy: To become successful it is necessary that we learn and that we make the best use of time, materials, tools and energy.

6. Energy properly applied is the power that produces results. Since results are the measure of our success it is necessary that we devote all our energy, both in mind and body, toward their accomplishment.

7. Service is an honest devotion to duty, and as we intend fully and honestly to live up to the above principles—Americanism, Justice, Cooperation, Economy and Energy, unusual service will be obtained and thus shall be established not only the reputation but the character of serving the best and the most, and we shall deserve and receive proportionately.

8. Under these six principles, which form the basis of the policy of this organization, it is recognized that the employees shall receive a just remuneration based on their individual worth and on their collective productive efficiency.

9. Therefore, in order to secure to the utmost the benefits of the close adherence to the foregoing great ideals we hereby create and adopt this Constitution:

Article I.

Section 1. For the proper execution of the Constitution there shall be provided three councils—An Executive Council, a Senior Council and a Junior Council.

Article II.

Section 1. The Executive Council shall be composed of the directors of the Company, elected by the stockholders, and the officials of the Company elected by the directors.

Section 2. Since this council must assume final responsibility, it shall be its duty to sanction or veto all measures, except as it may delegate this duty to the General Manager.

Article III.

Section 1. The Senior Council shall be composed of the Department

Heads, appointed by the General Manager, who shall be the permanent chairman of this Council and shall vote only in case of a tie.

Section 2. Its officers shall consist of a Chairman, Vice-Chairman and Secretary, appointed by the General Manager.

Section 3. It shall meet at such place, time and at such intervals as it shall decide, but not less often than once each month, and should the need arise for a special meeting, the Chairman shall call same by notifying the members.

Section 4. Its duties shall be:

(a) To consider and act on all communications or bills which may be sent in by the Junior Council.

(b) To originate bills; in which case they must be presented to the Junior Council for its consideration and action before presenting same to the Executive Council.

(c) To make such recommendations to the Management as, in its opinion, may seem desirable.

Article IV.

Section 1. The Junior Council shall be composed of one representative from each Department, elected by secret ballot for a term of twelve months.

Section 2. There shall be elected in the same manner an alternate to temporarily discharge the duties of the representative in case he is not personally able to do so.

Section 3. In case of a vacancy, there shall be held a special election in the particular Department affected.

Section 4. The election of the representatives and their alternates shall be held during the last half of the month of June and December of each year.

Section 5. Those eligible to vote shall have been members of the organization for at least thirty days and must be at least eighteen years of age.

Section 6. Candidates for an elective office must have been in the employ of the Company for at least three months and must be at least twenty-one years of age.

Section 7. No nomination shall stand unless candidate is present, or has given his consent, or, if present, he objects to such nomination.

Article V.

Section 1. Half or approximately half of the representatives shall be elected every six months and shall take office at the first meeting in July and January in place of the retiring members.

Section 2. The present Junior Council shall make a division before June 15, 1920, among its members by drawing lots to determine those representatives who shall retire at the first meeting in July.

Article VI.

Section 1. The officers of the Junior Council shall consist of a President, Vice-President and Secretary, to be elected by secret ballot for a term of six months; this election to take place at the first meeting of each new council.

Article VII.

Section 1. The Junior Council shall meet at least once each month. Should the need arise for special meetings the council President shall call same by notifying the members.

Article VIII.

Section 1. The duties of the Junior Council shall be—

(a) To investigate all disputes and grievances which may arise and if impractical of settlement by the Junior Council, make suitable recommendations to the Senior Council.

(b) To formulate, and act on, suggestions and bills, which decision shall be passed on to the Senior Council.

(c) To consider and act on any suggestions or bills which may be communicated to it by the Senior Council, which matters shall be referred back to the Senior Council with such recommendations as may seem expedient.

Section 2. The President of the Junior Council shall appoint all committees in that Council.

Section 3. It shall be the duty of each representative to interview at once anyone in his Department who may have a grievance and endeavor to obtain a speedy and just settlement of same, if necessary bringing the matter to the attention of the Junior Council.

Article IX.

Section 1. All bills and suggestions before being put into force must first be passed by a majority vote of both Senior and Junior Councils, and then be approved by the Executive Council, provided, however, that the General Manager may, at his discretion, pass upon such matters, acting under the authority conferred upon him by the Executive Council, and provided further that in the event of a veto vote by the General Manager, the measure may, by a two-thirds affirmative vote of both Senior and Junior Councils, be referred direct to the Executive Council, whose action shall be final; eighty per cent of the membership of any Council shall constitute a quorum.

Article X.

Section 1. Amendments to this Constitution may be introduced into any Council, but before being put into force must first be passed by a two-thirds vote of the Junior and Senior Councils; second, by a two-thirds vote of a general meeting of the organization, which meeting must have at least eighty per cent of its members present who are eligible to vote; and third, such amendments must be approved by the Executive Council.

If any employee wishes, he may be a member of a labor organization, but no interference in the affairs of the organization is tolerated from outside.

Western Furniture Manufacturing Centers in Portland

Advantages of Location and Power Supply, As Well As High Freight Charges on Eastern Goods Develop \$6,000,000 Furniture Industry in Northwest With Great Promise of Future Growth

BY W. C. HESTON

Industrial Engineer, Portland Railway, Light and Power Company.

It is hard to believe that the splendid factories which are now dotted throughout the Northwest have grown to their present positions of importance and become strong factors in the industrial situation in the Pacific Coast country within such comparatively short periods of time. In certain lines of industry and commerce, Portland lays just and unshakable claim to supremacy on the Pacific Coast. No claim is better established than that of leadership in the manufacture of fine furniture. Portland holds first rank among all cities west of Chicago and St. Louis in this industry, the output during 1920 being valued, conservatively, at \$6,000,000 compared with \$4,300,000 for 1919 and about three-quarters of a million for 1910, thus showing the phenomenal growth of the industry.

The plant and business of the Doernbecher Manufacturing Company at Portland illustrate quite strikingly the possibilities of rapid growth in industrial lines in the West when the proper sort of initiative is put into action. This concern specializes on dining room and bed room furniture. These are turned out in a variety of styles and finishes and a number of different woods are used in their manufacture. The business was founded by the late Frank S. Doernbecher in 1900. Mr. Doernbecher was one of the pioneers in the furniture industry in the Northwest, his first plant, which was situated in Tacoma, commencing operations in 1890. From this small beginning he expanded his business with many trials and tribulations to the present Portland plant, which is one of the largest furniture manufacturing factories in the Northwest.

The manufacture of furniture calls for a number of special machines found in no other line of industry, such as chair saddle machines, which form the seat of the chair at one operation; machines for special tongue and groove work, and sanders of half a dozen different varieties for sanding all sorts of shaped pieces. In addition, there will be found the familiar planer, band saw and circular saw as well as a number of others. It is in the shop, where all machines are electrically driven with individual motors, that electricity enters in as an important factor in the production of furniture, because of its more economical application than any other power.

The Preparation of Veneer.

Veneering—the art of attaching thin sheets or leaves of a wood or other substance to the surface of wood or other material of a less costly or ornamental description, plays an important part in the furniture industry. By the use of veneer strips glued to some baser wood, many families are now using furniture of exquisite woods which would be

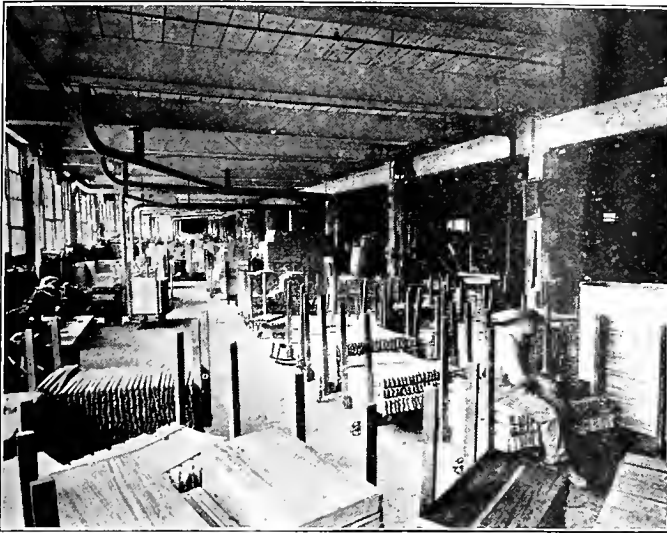
prohibitive from the cost standpoint if made from the solid material. Veneering is a most delicate process and the cutting of veneer has never been popular with lumber manufacturers. There are several methods for cutting veneer, one of which is to revolve a short log of the desired wood against a 30 or 40 inch knife, peeling off a thin sheet of wood. One use to which veneer is put is that of building up mats to a thickness of a quarter of an inch or more by laying the thin sheets one on top of the other with grain running in the opposite direction. The sheets are first run through a set of rollers which spread a thin film of glue over one surface to a uniform thickness. After stacking the sheets to the desired thickness they are placed in piles in a hydraulic press, where they are pressed together with a force of 6,000 pounds and clamped for drying. This fabricated wood is very light and strong and will not warp.

Mechanical Methods Improve Finishing.

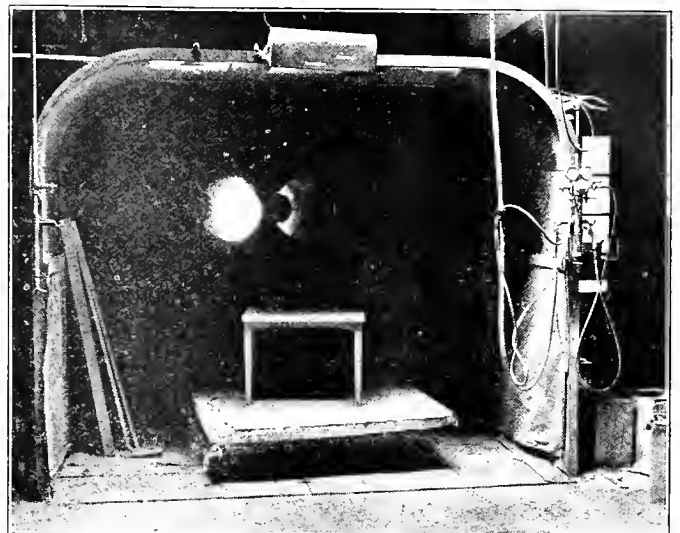
Putting on the finishing touches is equally as important as some of the earlier stages in making furniture, for it is here that the beautiful grain of the wood is brought out. The glossy polished finish is accomplished by working vibrating heated hand tools over the surface. A method has been in vogue for several years of spraying varnish and paint onto furniture instead of applying it with a hand brush. The article of furniture is placed in a hood with fans in the back of it to draw off the fumes and the varnish sprayed on with a "gun," as it is called, which works on the same principle as the burners used in gas welding. An operator with this machine can varnish a dresser in three to five minutes which would require a man with a brush at least 30 minutes to cover.

Good Future for Industry.

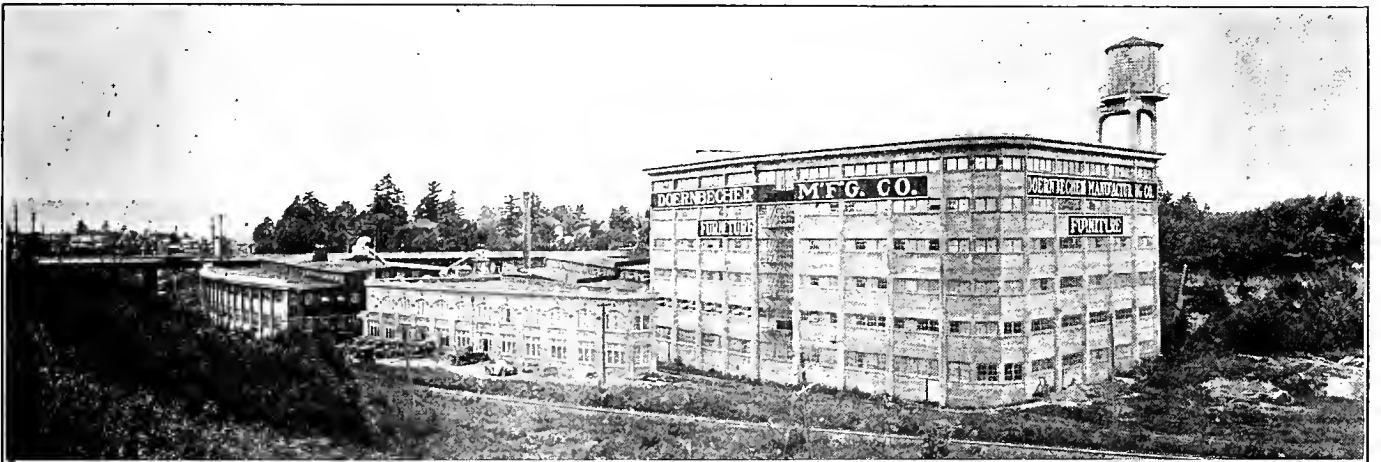
Although the western states contain very little of the woods necessary for the manufacture of high grade furniture, there is, nevertheless, a bright future for the furniture industry, as, with the excellent manufacturing conditions and abundant power supply, it is far more logical to ship the lumber west and turn out the finished product here than to ship the bulky articles from eastern factories to the coast. Certain woods are also obtained from the Orient. For a number of years western furniture factories have supplied the coast market in competition with eastern furniture, almost to the exclusion of the latter. The advent of higher freight rates has accentuated this situation and the growth of the furniture industry on the coast bids fair to keep pace with the growth of the industrial West.



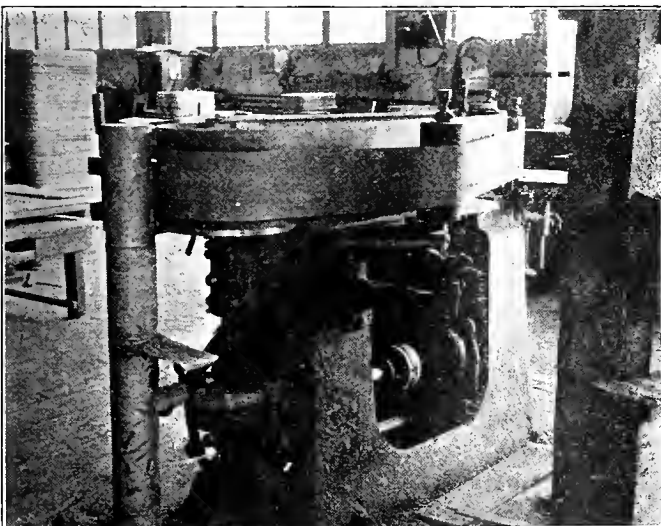
A view down one side of the immense shop. This is a typical section of one of two 100 x 300 ft. shop floors. All machines have individual motors, which in many cases are mounted on the ceiling to economize on space. Six floors, each with an area of 10,000 sq. ft., are required to store the output of the Doernbecher Plant.



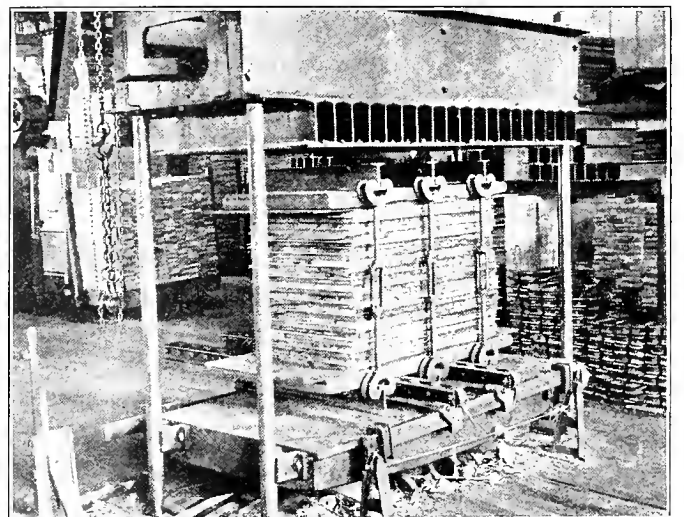
The introduction of this machine in the furniture industry marked the passing of the hand brush days. The varnish or paint is sprayed onto the piece of furniture by compressed air. Two fans are mounted in the rear to draw off the vapor. This machine will do the work of 10 men with hand brushes, in the same length of time.



The home of the Doernbecher line of furniture, Portland, Oregon. This plant is electrically operated throughout, with approximately 300 hp. of installed motor capacity. About 200 workmen are employed continuously.



A three-ton hydraulic press for compressing veneer after the individual sheets have been glued. The illustration shows a stack of veneer which has been subjected to high pressure and clamped ready for drying. These stacks are then placed on trucks and allowed to stand until they set.



The sandpaper on this machine is made in the form of a belt which is driven by a 3-hp. motor mounted in the base of the machine. In addition to the usual drum sanders the special requirements of the furniture industry call for a number of varieties of machines of the belt type.

How To Establish Confidential Relations With Your Banker

Solving Your Financing Problems by Using Your Banker as a Specialist and the Present Conditions Under Which the Electrical Retailer and Wholesaler May Expect Credit

BY C. W. BANTA

Vice President, Wells Fargo Nevada National Bank

It takes many years for a man to become an expert electrician. He must be not only rich in book learning, but he must have practical experience in each operation; not once on each problem or task, but many times under many conditions. The electrical engineer spends a lifetime in acquiring the technique of his profession. So do the lawyer, and the physician, and the expert accountant, and the architect.

To supplement my own training, I try to use the special skill which years of study and experience have given professional men of every kind. But how can this be done? I have gathered up a group of business friends, which, to myself at least, I call my cabinet—my board of directors.

Let me ask you: Have you at your command the sources of original information? Have you a cabinet like mine? Have you a banker in your group of business familiars?

How to Handle a Problem

While I am on the subject, let me ask, how do you think? When a man goes to school he is supposed to get for use in after life a "Method of Thought," so that he can think logically and act effectively and be right about 98 times out of 100. It was said of Harriman that he "always knew just what to do." If you had the sources of helpful information at your disposal, could you use them in your business to advantage? Let me analyze for a moment.

First, in approaching any subject you must have an open mind, as Spencer points out. Given a problem, you must clear your mind of resentment, prejudice, or even the desire that a certain conclusion may be reached.

Second, you must consult the sources of original information, either books or men.

Third, you must relate, one to the other, all the facts that you have gathered, in the order of their importance.

Fourth, this much done, the decision as to what to do comes up of its own free will. Judgment is not to be pursued—it will pursue you. You will know what to do.

Fifth, get action. Don't stop to review your facts, or to search for more information. Get action. You will be right in 99 cases out of 100.

Use special ability whenever you can find it; get close to your doctor and to your dentist, know your lawyer and your banker; use the special skill which years of study have given professional men of all businesses; your systemizer and accountant, cultivate him. Use even your competitor—and let him use you! Remember that he may know some things about your business that you do not know, and may know more of your faults and your good points than you do yourself.

The Fallacy of Secrecy

If you are in, and can get him into, an organization of men in your trade, drag out before him into

the light of knowledge every unprofitable practice. Remember that your competitor's ignorance, or incompetence, instead of being of advantage to you, as heretofore supposed, has been discovered to be a real menace to you and to your trade.

Today business men are freely giving to competitors of their confidential information, data which, a few years ago, would have been considered trade secrets and good-will. In short, cooperate. He profits most who serves best!

I was very much surprised, several years ago, to learn that a great eastern railroad purchases the oil for its signal tower lamps, not—as is usually the case—by the gallon, but at so much per hour for light; that is, it pays according to the service rendered by the oil. Now, every individual in the world is measured or judged by the same standard.

Organizations, such as yours, are recognized as the schools in which this new philosophy of service can be learned. They teach that the competition of today is the competition in service, and the survival of the fittest, today, is the survival of those fittest to serve. Gain is no longer to be the main object of business, but service is. Profit is to be a by-product of labor; the reward of faithful service.

The Power of Cooperation

Cooperation is the greatest word in business today. Every business and every business man must cooperate; retailer with wholesaler; competitors must cooperate between themselves, and the dentist, the physician, and the banker with them all; labor with capital; nation with nation. If we expect to uphold and to develop our present civilization, political as well as industrial, we must know ourselves, and we must know one another.

But, you say, you would like more details of the actual cooperation between the banker and yourself. All right! First, there are two kinds of bankers. There are those who regard credit as merchandise to be sold at a price to whom they please. Usually this banker believes that, with his money any business can be successful, and without his help all business is doomed to fail.

On the other hand there is the professional banker. To him the bank appears a great common pot into which men have put their active funds and their surplus. The bank, to him, is a great public service institution. He himself is without prerogatives; he must deal justly, scientifically; he must divide the resources of the bank into loans; advances must be made, out of the common pot of deposits, in proportion, I say, to what the borrower has contributed to the common fund.

The Basis of Credit

Experience has taught bankers that, in commercial banks, an advance can be made up to, say, five times the average deposit of the client. If much more than that were given borrowers, those who came last would find the vault bare.

Roughly, banks average a certain number of non-borrowing dollars to a certain number of borrowing dollars. The law requires certain reserves to be kept; the bank must have cash on hand to care for the day's turnover; the balance that is not thus required is left to be divided equally, in proportion to balances, among the bank's clients. It should be loaned first for the legitimate requirements of manufacturers and distributors of such commodities as help citizens generally to live comfortably and happily.

Next you may ask, "How much, then, should a store like mine be entitled to borrow, after considering the fact that the credit line must be controlled by my cash balance donation to the common pot?" My answer must be, that every loan must be safe. Are you competent and efficient? How can safety be assured?

The past is the only indication of the future. Are your antecedents clear? What do they think of you in the trade? What is your reputation? And your character? Does your banker know you well enough to appreciate—to feel sure of your character? Reputation, they say, is the reflection of character. To feel sure of a man's character, you must know that you know him—his weak points and his strong ones. A sign of good character is when a good man knows and likes another good man—like attracts like. What is your banker's character? Do you know? Does he know yours?

Another matter. I have seen men with clean antecedents and good reputations, men reputed to possess good character, and yet, so weak in some way that they were not competent to manage their own salaries. How much credit are you competent to handle and to pay back in time for others who are also entitled to it to use? You see, in the spring, great sums are necessary to finance the growth of the crops; then, when they are sold the farmers must repay their loans, from the funds they receive, so that the banks can loan the money to the fruit canners and the like, and the canners must repay the great advances to them, so that the wholesalers can stock for the retailers' winter requirements; then, again, money must be available for the Christmas trade, and after that for, say, spring millinery.

Your credit depends upon your ability to repay what you have borrowed. The velocity of turnover, or sales volume, is what returns funds to repay advances. If you already owe to the trade all that you can possibly get in by a given time, how can you repay additional borrowings from your bank?

Of course, you may be able to repay the proposed advance when due, but can you show anyone else that you can? If you cannot demonstrate the fact that you can easily repay your loan, how can you expect to get it?

Watching Your Financial Situation

The best way to keep tab on your financial situation is to keep what I call an anticipation sheet. This sheet will show what bills you must pay—now—in 30 days—in 60 days—in 90 days—and so on. Also it will show what you must pay out in overhead during the same period. On the other hand, it will indicate estimated cash receipts and income from accounts receivable. It is plainly to be seen that the difference between outgo and income will be available to pay off loans.

Usually, the bank official who makes a loan must in turn sell the loan to a finance committee or a board of directors. If he does not do so in every case when the loan is made, he certainly has to when it is not paid upon maturity.

If the borrower does not properly and thoroughly sell the bank official, he will not get the loan in the first place. If he does not repay the loan when due, and the official who made it cannot explain why it did not work out, as explained in the beginning, and how it is going to go if renewed, he not only has a bad moment with his committee, but he places less confidence in his client's explanation upon the occasion of the next loan application.

A business with, say, \$10,000 capital, should not go very far into debt, unless it has some special cooperative scheme with well financed manufacturers. A company with \$20,000 capital usually should not owe more than \$7,500. On a \$50,000 capital, \$30,000 is about the limit. When capital of \$100,000 is involved, quick assets should never run less than two to one over liabilities.

Discounting Instalment Notes

I understand that you are interested in the discounting of instalment notes taken in the sale of electrical machines. Every company should have an open commercial credit of a certain amount. If they wish to use up this credit line, to discount instalment contracts, I have no objection.

Outside of the commercial deposits, which must be conserved for use in commercial loans, banks sometimes have deposits of funds waiting for investment—these are dormant or idle moneys. This class of deposits, logically, can be invested in such investment paper as time contracts taken in the sale of washing machines, phonographs, automobiles and the like.

When the wheels of the financial world are sufficiently oiled, and business progresses favorably, there are ample funds available for investment in instalment paper.

At present, we do not see any such situation. Commercial bank deposits, which usually go out to each industry and return, have of recent months frozen solid. The banks are heavily in debt to the Federal Reserve Bank. If it were not for the Reserve Bank, I do not know where we would be today. Suffice to say, we would be in pretty bad shape. Not only might you be unable to finance your instalment contracts, but you would probably be floundering in the slough of a real old-time financial panic.

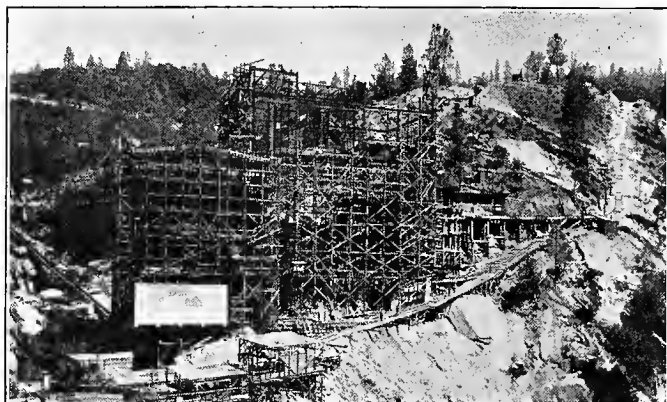
Big Creek Plant Adds 30,000 Hp. to Western Power Supply

Rush Work on the Big Creek Number Eight Plant of the Southern California Edison Company Breaks All Construction Records and Provides Further Protection Against Power Shortage

BY R. E. SMITH
Southern California Edison Company

On May 4, 1921 carpenters built the first false work for the Southern California Edison Company's Big Creek Plant Number Eight. On August 11th the plant was brought into service, thus breaking all known records in power plant construction.

Warned by the power shortage in 1920, the Edison Company has this year added three new important units, the \$10,000,000 plant on the Kern River with its 40,000 horsepower installation, 22,000 horsepower capacity added to Big Creek Plant Number



General view of the power house taken from across the San Joaquin River. The course of Big Creek may be seen to the extreme left. On the right is the incline railway, showing the four levels at which supplies are brought into the building.

Two, and the Big Creek Number Eight just completed with an initial capacity of 30,000 horsepower supplied by a General Electric generator and a reaction turbine, built by I. P. Morris, Philadelphia. Building and equipment are designed for 220,000-volt operation.

The transformers, which are of the single bushing type, are 10 feet in diameter, 13 ft. high and weigh fifty tons each when filled with oil. The bushings are 12 feet long and have a maximum diameter of 30 inches.

The water to supply this plant is diverted from the course of Big Creek immediately below power house number two and is carried through a tunnel with a cross section of 20 x 20 feet drilled through solid gray granite, an enlargement of the tunnel started several years ago at the time Stone & Webster built the original Big Creek Plants. In one month a distance of 1260 feet was bored, which is claimed to be a record for work of this character.

The plant is located in the bed of Big Creek at the point where it joins the San Joaquin River. The penstock is 8 feet in diameter and $\frac{3}{8}$ inches thick at the top, tapering to a diameter of 6 feet and a thickness of $1\frac{1}{8}$ inches at the bottom. It is 2,710 feet long with a head of 750 feet.

Material was delivered to the job from the San Joaquin and Eastern Railway which is two miles away and 2,800 feet higher in altitude. An incline railway was installed for this purpose, over which 20,000 tons of material have been handled. Sand and rock were secured from the tunnel dumps and lumber was furnished by nearby mills.

An interesting piece of work was done by the men from the General Electric Company who assembled the generator on the job. It was necessary to ship the big castings in two sections and the engineers were of the opinion that if assembled at the factory in two parts the generator would be noisy in operation. When the materials arrived on the job, the building was not far enough along to receive them. Accordingly, a tower 40 feet high was built up from the bed rock and on this the generator was assembled while the construction crew was bringing the building up to that point. When the generator floor was complete, the false



Transformer tanks loaded on "strongback" cars, ready to let down the incline railway. A section of penstock is seen on an adjoining car. D. H. Redinger was resident engineer on the work.

work was knocked out, several weeks being saved by the operation.

Another record was broken when the 150-ton crane was installed and put in operation in eight days, including all the incidental steel work.

Speed has characterized the job from the start. The work has gone on twenty-four hours a day without Sundays or holidays. Camps were built at suitable locations to accommodate a maximum of 2500 men. Transportation was speeded up by train riders who accompanied important shipments from the factory to the job and the efficiency of this scheme was demonstrated when the parts for the big generator were brought from the factory in Schenectady, New York, and delivered on the job in sixteen days.

Disabled Veterans Training for Electrical Field in the West

Two Hundred and Fifty Disabled Ex-Service Men Now Successfully Preparing in Western Schools to Enter Electrical Work in This District as Electricians, Salesmen and Engineers

BY G. VERNON BENNETT
Federal Board of Vocational Education.

In less than ten years the electrical workers of the Pacific Coast are going to number among themselves many ex-service men who, after being disabled in the war against Germany, will have been trained by the Federal Board for Vocational Education to carry on as if they had never possessed a handicap. True, one will only be able to find them here and there, ten in San Diego, five in Phoenix and so on; but if called together in a reunion they will total nearly two hundred and fifty men in the three southwest states of California, Arizona and Nevada. And wherever one finds them, he can be pretty sure that they will be contributing to society's sum-total of wealth and the electrification of western industry.

Just at present these embryo electricians are taking their vocational training in many and diversified ways. A few are at the technical colleges in the Universities of California, Arizona, Nevada and Southern California, and the California Institute of Technology. These eighteen men are taking the regular professional courses in electrical engineering a few will graduate each year during the next half decade.

On December 1, 1920, the writer reviewed the cases of the men at that time in training at the above institutions. Out of the fifteen men, nine had entered the college with one or two deficiencies, usually physics or mathematics. All but two, however, have had the equivalent of a full high school education. Their records were as follows:

- | | |
|---|---------------------------------------|
| 1 man making up his High School deficiencies. | 1 man passing in all but one subject. |
| 1 man failing. | 1 man Fair. |
| 2 men passing in all but two subjects. | 8 men Good. |
| | 1 man Excellent. |

The man marked "failing" was stone deaf. He is now taking a thorough course in lip-reading.

If these eighteen men now in training graduate, they will form only 1 per cent of the total number of electrical engineers in the three states of Arizona, California and Nevada. At present there are 395 students taking electrical engineering in the colleges of the Southwest. These include Stanford University, where the Federal Board has many students but none at present taking electrical engineering. The disabled veterans number only one in twenty-two of students in electrical fields.

We may assume that the Board's rehabilitants will not from a numerical standpoint endanger the success of electrical engineers now practicing on the Pacific Coast.

Two of the men taking this thorough college training are preparing to be executives and organizers of power concerns. Others had not decided as to what to follow ultimately. The Federal Board

expert on the professions has listed the following vocations within the field of electrical engineers:

- | | |
|---------------------------------------|--|
| Consulting engineer. | Manufacturers machinery and supplies. |
| Light or power plant engineer. | Executives lighting systems. |
| Power line construction engineer. | Executives electric railway systems. |
| Radio engineer. | Executives telephone systems. |
| Telephone building engineer. | Executives radio systems. |
| Telephone electrolysis engineer. | Professors of electrical engineering. |
| Telephone line construction engineer. | Editors and authors electrical publications. |
| Contractors. | |

Two hundred and ten men are taking training that will make them first class electricians of a highly skilled type. Of these, 97 are in three first class trade schools of the coast, 23 are in other trade schools, while 90 are in placement training with the business establishments where they are eventually to be employed.

It will be seen from the above that nearly half (90) of the trainees are ready to be absorbed into their trades. Gradually the other 120 will be placed in shops where they can complete their training and be eventually employed. Some will start shops of their own, some will become salesmen of electrical supplies. Effort is made to distribute the men among a large number of small concerns rather than place them all with one big establishment. However, if any one of the big companies makes a bid for the ex-service men at attractive wages, the Federal Board will do whatever is best for the men.

The following list shows the definite employment objectives at which the men are now aiming:

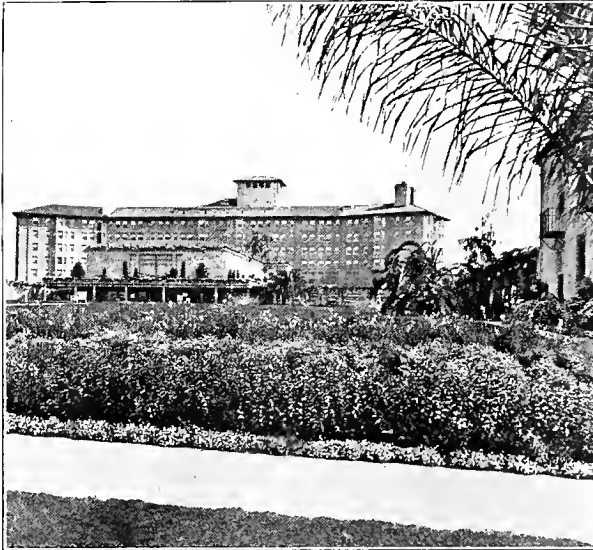
- | | |
|-------------------------------|--------------------------------|
| Aero electricians. | Motor winder. |
| Armature winder. | Power plant electrician. |
| Auto electrician. | Radio operator |
| Battery expert. | Radio technician. |
| Cable splicer. | Telegrapher. |
| Dynamo and motor constructor. | Telephone installer. |
| Dynamo tender. | Telephone switchboard expert. |
| Electric welder. | Salesman auto accessories. |
| Foreman electrical shop. | Salesman electrical equipment. |
| General electrician. | Salesman electrical supplies. |
| Ignition expert. | |

The census returns are not yet available, but it is confidently expected that they will show over 20,000 men in the Pacific Southwest engaged in the electrical trades as artisans or as salesmen. If these figures are even approximately correct, the 210 disabled ex-service men will be only a drop in the bucket.

The demand for artisans compared with the supply is greater than for electrical engineers. Consequently the wages for the former are as great if not greater than for the latter. This in spite of the fact that the engineer must put in four years in high school and at least four years in college, whereas the artisans may enter a trade school from the eighth grade, finish his institutional training in two years and spend only a year or two in job training before receiving practically the full wage of a journeyman.

New Buildings in Los Angeles Part of Big Program

One of a Pictorial Series Featuring Interesting Applications of Electric Service, Advances in Home, Industrial and Power Construction and Noteworthy Developments in Western Progress



HOTELS

For its tremendous influx of visitors Los Angeles is providing adequate and luxurious hotel accommodations, of which the new Ambassador Hotel and grounds shown in the picture are typical.



HOMES

There is no housing shortage in Los Angeles. The rapid building of modern residences such as this adobe "Electrical Home," keeps pace with the increase in population which continues at a high rate.



THEATERS

The visitor to Los Angeles is not disappointed when he expects to find that the world's moving picture center is erecting the most up-to-date places of amusement in every department of this field.



COMMERCIAL BUILDINGS

The business buildings in Los Angeles are in keeping with the city's increasing industrial and commercial importance. The building program for the year 1919 was something over \$28,000,000, and for 1920 was over \$60,000,000. Up to June 1, 1921, the total had passed \$28,000,000, and since then has been running at a monthly rate double that of 1920. The number of building permits issued for the month of May totalled 2,624, with a valuation of \$7,433,760. The building shown is that of the four million dollar addition to the home office building of the Pacific Mutual Life Insurance Company of Los Angeles. During the month of June Los Angeles ranked third in the United States in the number of building permits—outdistancing all cities but New York and Chicago—a remarkable example of the business activity which this part of the country is enjoying in spite of the general depression elsewhere.

Study Course

A University Accounting Course for the Contractor-Dealer and the Business Men in the Small Industrial Plant

BY PAUL B. KELLY

XII—THE PRACTICAL OPERATION OF THE STANDARD ACCOUNTING SYSTEM—THE SALES RECAPITULATION SHEET.

It has already been pointed out that almost all business transactions which occur in an electrical store can be recorded on the following forms:

1. Customer's Bills.
2. Bills or Invoices from Creditors.
3. Cash Receipt Tags and Cash Sales Tags.
4. Check Stubs.

Each time that one of these forms is filled out, a business transaction is recorded. Each form could be made the basis for a journal entry. For example, a sale of merchandise on account is recorded on the form known as the Customers Bill. The duplicate of this shows the date, name, selling price, and cost price. A journal entry might be made as follows:

Dr.	Cr.
a. Accounts Receivable.	a. Sales Billed
b. Cost of Sales Billed.	b. Merchandise

In the early days this was done, but short cuts to the same results have been discovered.

A little study will reveal to you the fact that the accounts which are affected by the transactions recorded on any of the above forms are always the same, or at most, affect only a very small number of accounts. For instance, the accounts which are affected by the posting of a Customers Bill for merchandise are:

Accounts Receivable.	Sales Billed
Cost of Sales Billed.	Merchandise.

and the accounts affected by the posting of a customer's bill for a "time and material" or a "contract" job are:

Accounts Receivable	Sales Billed
Cost of Sales Billed	Merchandise
	Labor in Progress.
	Direct Job Expense Unbilled

Because of this fact, it is very feasible to summarize the data recorded on these forms into monthly totals by the use of specially ruled sheets. When these sheets are used, the data recorded in each kind of form is summarized and is posted at the end of the month in total. The saving in book-keeping work is of course, tremendous. The ruled sheets needed to summarize the data on the various forms have been devised and are furnished as part of the Standard Accounting System Set. They are:

Name of Sheet	Used to Summarize
1. Sales Recapitulation Sheet	1. Customers bills
2. Voucher Disbursement Sheet	2. Bills received from creditors
3. Cash Received Sheet	3. Cash Receipt Tags and Cash Sales Tags
4. Cash Paid Sheet	4. Check Stubs

Classification of Sales

The electrical contractor-dealer has two distinctly different classes of sales corresponding to the contracting and the merchandising activities of his business. These two classes of sales are:

1. Construction Sales
2. Store Sales

Construction Sales represent the income from the contracting side of the business. Construction sales include all amounts charged to customers for "time and material" and "contract" jobs.

Store Sales represent the income of the business from merchandising. Store Sales are distinguished from Construction Sales by the fact that labor and direct job expense do not enter in as elements in the cost of such sales. A glance at the cost data on a customer's bill will therefore enable one to tell at a glance if the sale belongs to one class or the other.

The importance of making this division or classification of sales will be fully explained in the last lesson. It is sufficient at this point to notice that the sales recapitulation sheet provides for this classification.

Store Sales might be further subdivided into such classes as lamp sales, motor sales, etc., if this information is desired.

Entering the Customer's Bills on the Sales Recapitulation Sheet

After the duplicates of the customers' bills have been posted they are ready to be listed on the sales recapitulation sheet. The duplicates of customers' bills which record construction sales are not segregated from those which record store sales. This classification of the data is made when the data is properly entered in the right columns on the Sales Recapitulation Sheet.

Before the duplicate customers' bills are listed on the sales recapitulation sheet they are first serially numbered in the manner described in Lesson No. 2. The first thing that is listed on the sales recapitulation sheet is the bill number. A special column headed Customers' Bill No. — is provided for this purpose on the sheet. If the customers' bill records a constructive sale, it will also bear a job number. This job number should be entered in the column headed "Job No." which is provided.

On the left side of the sheet there is a division entitled "Constructive Sales." Under this title there are five columns which are used for the entry of the data recorded on duplicate customers' bills for construction work as follows:

Berkeley Cal. 12-31-20 Bill No. 1

M. J. B. Stedman
2635 Sixth St. - B'ly
ACME ELECTRIC CO. B.
WHOLESALE OF ELECTRICAL SUPPLIES
ELECTRICAL CONTRACTORS
EDISON MAZDA LAMPS

Job No. 1

1	200 A. @ 3W Sw & Plates	57.07
4	2 Locknuts	1.16
2	2 Bushings	.88
1	2" L.B. Condulet.	4.34
1	2" Blank Cover	.95
2	1 1/2" Locknuts	.32
1	1 1/2" Bushing	.26
1	1 1/2" x 1" Nipple	.65
3	hrs. Labor @ 1.75	56.00
	Inspection	.75
Total		122.38

Cost

Mdse	50.49
Lbr	96.00
D.J. Exp	1.35
Total	91.83

ACCOUNTS RECEIVABLE

NAME American Apartments,
ADDRESS 1960 Tenth St., Oakland

DATE	FOLIO	DEBITS	CREDITS	BALANCE
12-31-20	2	66.90		66.90

ACCOUNTS RECEIVABLE

NAME Mr. J. B. Stedman
ADDRESS 2635 Sixth St., B'ly

DATE	FOLIO	DEBITS	CREDITS	BALANCE
12-31-20	1	122.38		122.38

Berkeley Cal. 12-31-20 Bill No. 2

M. American Apartments
1960 Tenth St., Oakland
ACME ELECTRIC CO. B.
WHOLESALE OF ELECTRICAL SUPPLIES
ELECTRICAL CONTRACTORS
EDISON MAZDA LAMPS

1	Royal Vac Cleaner & Set of Tools	22.50	63.00
2	75 W-115 V. C. Mazda	.84	1.60
2	60 W-115 V.	.69	1.50
2	40 A. Cart. Fuses	.13	.80
Total		24.16	66.90

Cost

Mdse 59.92

Posted

SALES RECAPITULATION SHEET
DECEMBER 1920

CUSTOMER'S BILL NO.	JOB NO.	CONSTRUCTION SALES				LAMP SALES		STORE SALES		SALES	
		MODE COST	LABOR COST	DIRECT JOB EXPENSE	COST OF SALES	COST OF LAMP SALES	LAMP SALES BILLED	COST OF STORE SALES	STORE SALES BILLED	COST OF SALES	SALES BILLED
1	1	50.49	46.00	1.35	91.83		122.38		59.92	66.90	
2											
3	3	13.14	4.30	2	17.46		21.93 15				
4	6	38.60	172.50	75	111.85		165				
5	4	10.25	17.50	75	28.50		42.80				
6								19.60	26.75		
7								21	35		
8								4.20	6		
9	2	50	121	5	176		1250				
10								4.75	8.29		
11								70	1.05		
12								2.35	3.70		
13								31.94	42.84		
14	7	101.65	88.20	22.5	193.10		240.60				
15								12.30	19.05		
16								9.24	13.45		
17	5	78.35	116.25	1.25	195.83		254.26				
18	9	17.10	57.25	50	54.85		79.70				
19								38.15	52.30		
20								84	1.70		
21								3.35	4.15		
22								9.10	14.85		
23								14.10	21.85		
24								58.40	79		
25								1.85	1.40		
26	8	428.40	327.50	2.50	798.40		1,014.90				
27	12	8.50	21.10		29.60		41.25				
28								5.45	8		
TOTAL		2137.31	1272.30	116.35	3425.96		4412.14	263.53	355.43		

ACCTS. REC. Page 104

4412.14

355.43

COST OF SALES BILLED Page 20

3425.96

263.53

JOURNAL

DATE	GENERAL LEDGER	ACCOUNTS RECEIVABLE	NAME	AMOUNT	GENERAL LEDGER	ACCOUNTS PAYABLE	NAME	AMOUNT
12-31-20		184	Accounts Receivable	155		184	Sales Billed (Const'n)	155
		20	Cost of Sales Billed (Const'n)	179		20	Merchandise	179
			Labor in Progress	179				179
			Direct Job Expense Unbilled	165				165
12-31-20		184	Accounts Receivable	1		184	Sales Billed (Store)	1
		20	Cost of Sales Billed (Store)	155		20	Merchandise	155

LABEL IN PROGRESS Page 170

1272.30

16.35

SALES BILLED Page 1

4412.14

355.43

MDSE. BILLED

2137.31

263.53

Heading of Column	Use of Column
1. Mdse. Cost	Enter in this column the cost of merchandise used on construction jobs.
2. Labor Cost	Enter in this column the cost of the labor expended on each job.
3. Direct Job Expense	Enter in this column the amount of the direct job expenses incurred on each construction job.
4. Cost of Sales	Enter in this column the total cost of the merchandise, labor, and direct job expenses on each construction job. The amount entered in this column will equal the sum of the amounts entered in the preceding three columns.
5. Sales Billed	Enter in this column the amount charged to the customer for each construction job.

Study the chart and note how all the data listed on the duplicate of Mr. Stedman's bill was transferred to the sales recapitulation sheet.

On the right side of the sheet there is a division which bears the heading "Store Sales." Under this heading there are two columns which bear the names "Cost Store Sales" and "Store Sales Billed." In these columns the cost and the selling price of merchandise sold on account are posted. Of course, the bill number is entered in the first column on the left. Study the chart and see how a store sale billed to the American Apartments was listed.

Journal Entries

When a single Sales Recapitulation Sheet is filed, each column is added. The totals are carried forward from one page to the next until the end of the month. At the end of the month, after the last customer's bill has been listed, the Sales Recapitulation Sheet then being used is footed and a monthly total for each column on the sheet is thus secured. These monthly totals furnish the basis for journal entries which reflect in the general ledger the combined effect of all the month's customer bills.

Study the chart to see how the totals from the Sales Recapitulation Sheet are journalized. Notice that the totals of the "Sales Billed" column, of the "Cost of Store Sales" column, and of the "Store Sales Billed" column are used on both the debit and credit sides of the journal entries. Also, notice that the total of the "Cost of Sales" column should equal the sum of the totals of the "Mdse. Cost," the "Labor Cost," and the "Direct Job Expense" columns. You can use this fact in cross checking the addition.

The journal entries which arise from the Sales Recapitulation Sheet are posted to the general ledger in the manner explained in Lesson No. 10.

Posting to the Accounts Receivable Ledger

Before the customers bills are filed they should be posted to the Accounts Receivable Ledger in the manner explained in Lesson No. 2. When posting the customers bills to the Accounts Receivable ledger, the sales recapitulation sheet should be in view. As each customer's bill is entered in the Accounts Receivable ledger, the charge should be compared with the amount entered in the Sales Billed columns of the sales recapitulation sheet. This comparison should be made in order to make certain that the

detailed charges entered in the Accounts Receivable ledger during the month will equal the total charge which will be posted to Accounts Receivable in the general ledger at the end of the month.

Controlling Accounts

The Accounts Receivable account, and, similarly, the Accounts Payable account in the general ledger are designated by accountants as controlling accounts. They are given this name because they act as a check or a control of the accuracy of the ledgers in which the accounts with debtors and creditors are kept. These ledgers are known as "detailed" or "subsidiary" ledgers. If no error is made, the balance shown by the controlling account will equal the sum of the balances shown in the subsidiary ledger. The controlling accounts thus insure accuracy.

When a double entry set of books is started, the amount which is debited to the Accounts Receivable account is the total of the balances shown in the Accounts Receivable ledger. The state of equality thus started with, is maintained by entering the debits and the credits which are posted in detail to the Accounts Receivable ledger by monthly totals in the Accounts Receivable account in the general ledger. Notice that the sales recapitulation sheet provides the means by which the debit to the Accounts Receivable account is obtained.

It would, of course, be possible to keep in the general ledger each customer's and each creditor's account instead of keeping them in subsidiary ledgers. If this were done, no controlling accounts would be used. However, this procedure would be very objectionable. The trial balance would be very long and difficult to compile. The detail would be confusing... Furthermore, the total amount due to the proprietor and the total amount due from him would not be exhibited. The use of controlling accounts eliminates these objectionable features and in addition, creates a means of checking.

Credit Memoranda

On rather rare occasions, it happens that goods sold on account to a customer are returned and must be credited to the customer's account. Such a return of goods is just the reverse of a sale on account. The easiest way to handle it is to treat it exactly the same as a sale of merchandise on account except that the entire record must be made in red ink. A credit memorandum should be made out in red in on Form No. 8—the Customer's Bill. This credit memorandum should then be costed. After being costed, it should be entered in red ink on the sales recapitulation sheet. No. 28 on the sheet shown in the chart is an illustration of such a transaction.

The red ink figures are, of course, subtracted instead of added to the black ink figures. Columns which include red ink figures are totalled by first securing the sum of the black ink figures and then subtracting from it the sum of the red ink figures.

The credit memorandum should be posted on the credit side of the customer's account in the Accounts Receivable ledger in black ink.

Increasing Production in Industry

Shortcuts in Management and New Power Applications That Have Reduced the Cost of Manufacturing Processes or Increased the Rate of Production.
Ideas and Suggestions by Practical Men.

THIS DEPARTMENT will be devoted to a discussion of practical problems of factory operation and management. Readers' requests for information will be published in each issue, together with the answers to previous questions. It is hoped that readers will take full advantage of this opportunity to profit by the practical experience of others and to give others the benefit of their own discoveries. Space rates will be paid for answers which are published.

INFORMATION REQUESTED

Checking Power Bills —

Are there any suggestions as to the best method of checking power bills? P. D.

Metal Chips Hinder Work —

We are troubled with metal chips falling on the work. We have devised several methods for preventing this, but none of them are entirely satisfactory. Has anyone worked out an economical and effective system? S. R. E.

Electrically Operated Salt Drier —

Is there any possibility of getting an electrically operated drier for salt or is cost prohibitive? What electric driers are in operation? F. A. R.

Provision for Overloads —

We have continual trouble with equipment burning out in a small motion picture theater. We attribute this to the fact that the power company makes no provision against overloads. Have we any recourse? M. J. C.

Savings on Non-Ferrous Furnace —

We are thinking of installing an electric brass melting furnace. Is the saving in metal due to smaller volatilization sufficient to pay for the extra cost of operation? C.W.L.

PREVENTION OF HEADLIGHT BREAKAGE ON STORAGE BATTERY TRUCKS

Has any protective device been worked out to guard against danger from headlight breakage on electric trucks used in mines? W. E. S.

The best answer to the request of W. E. S. is to be found in a bulletin on "Storage Battery Locomotives" published in 1920 by the Bureau of Mines. A headlight device was experimented with by the government some time ago, but was not found sufficiently satisfactory to recommend. The danger involved is of course due to the liability of explosive gases coming in contact with a heated filament or a spark in case of lamp breakage and the only object of a protection device is to prevent such contact. It was proposed to guard the lamp against damage through a metal disc so arranged that if injury did occur, the lamp circuit would be mechanically disconnected. The circuit opening device operated in only four out of ten tests, however, and it was felt that the arrangement was too complicated and unreliable for practical use. Moreover, such safety devices probably would not be kept in good repair and would

thereby add new danger unless protection were provided against possible ignition by sparks.

The best protection for storage battery locomotive headlights at the present time is to choose a substantially constructed headlight in the first place, with heavy, well protected glass, and then to install and guard them so that the danger of breakage is minimized. There should be no exposed contacts in a headlight and all wiring to it should be in conduit or flexible armor.

COLVIN S. GREY, Oakland.

PUMPING PLANT INSTALLATION COSTS

For the use of those planning the installation of a small pumping plant, the following table of costs as made up by the Valley Electrical Supply Company of Fresno, California, will indicate what size of unit will prove most economical for the demands to be made of it in the particular situation in question:

COSTS OF PUMPING PLANT INSTALLATIONS

110 Volt—Single Phase					
	H.P.	Switch Board	Wiring Material	Price of Board and Material	Add prices per foot in excess of 30 feet
WOOD:	1	\$72.00		\$ 91.00	
METAL:		80.00	\$19.00	99.00	\$.45
WOOD:	2	91.50		118.90	
METAL:		107.60	27.40	135.00	.52
WOOD:	3	108.20		146.45	
METAL:		127.30	38.25	165.55	.60
WOOD:	4	108.20		146.45	
METAL:		127.30	38.25	165.55	.60
WOOD:	5	144.00		186.00	
METAL:		160.00	42.00	202.00	.74
220 Volt—Single Phase					
WOOD:	1	\$72.00		\$ 91.00	
METAL:		80.00	\$19.00	99.00	\$.45
WOOD:	2	72.00		91.00	
METAL:		80.00	19.00	99.00	.45
WOOD:	3	91.50		118.90	
METAL:		107.60	27.40	135.00	.52
WOOD:	4	91.50		118.90	
METAL:		107.60	27.40	135.00	.52
WOOD:	5	108.20		146.45	
METAL:		127.30	38.25	165.55	.60
220 Volt—Three Phase					
WOOD:	5	\$77.70		\$ 98.45	
METAL:		97.25	\$20.75	118.00	\$.46
WOOD:	7½	85.40		120.40	
METAL:		98.35	35.00	133.35	.58
WOOD:	10	101.20		136.20	
METAL:		118.00	35.00	153.00	.58
WOOD:	15	101.70		140.70	
METAL:		118.50	39.00	157.50	.60
WOOD:	20	147.60		196.85	
METAL:		161.00	49.25	210.25	.78
WOOD:	25	149.00		206.00	
METAL:		162.00	57.00	219.00	.98
WOOD:	30	156.40		237.90	
METAL:		164.25	81.50	245.75	1.20

7½ H. P. motors and under require some form of starting switch with overload and under-voltage protection features, these switches are not included in these prices. For larger motors, the starting devices are always shipped with the motors. Cutting and threading conduit is not included and extension cords are also extra.

VALLEY ELECTRICAL SUPPLY CO.

Fresno, California.

ROUTING THE TECHNICAL MAGAZINE

Most plants subscribe to a number of technical magazines which are routed about among employes. The reason for this is that the technical magazine of today is the only up-to-date text-book and it is worth money to the company to have its employes familiar with the latest advances in their particular field. Too often, however, some one of the men holds up a copy, or several, until those following are compelled to read through four or five issues at a time, thus in a large measure defeating the purpose for which the magazine was provided. The British Columbia Electric Railway Company, Ltd., has solved this difficulty by sending out magazines from the central office to each man in turn, according to the prearranged order, and requiring each copy to be returned to the library after it is read, whence it is sent to the next man on the list. No copy of a publication is sent to any employe unless the previous issue of the same publication has been returned to the library.

EFFICIENCY RECORDS STIMULATE COMPETITION BETWEEN SHIFTS

The keeping of steam power plant efficiency records is of acknowledged value from the standpoint of the executive who can thus keep in touch with the weak points of his machinery and organization. If such records do not stop at a determination of the kilowatt hours per barrel of oil, but take into consideration the characteristics of the plant and the system under which it operates in so far as these details affect efficiency, they may have a further effect in building up the spirit of the plant.

It is obvious that competition between men is a desirable aid to plant efficiency. This can only be obtained by the use of readily understood comparative records. It is impossible to get competition in the ordinary steam stand-by plant between shifts working different hours of the day, for example. Particularly the shift from midnight to 8:00 a. m., has a comparatively light load, and if you try to compare the kilowatt hours per barrel of oil for a shift of that kind with the kilowatt hours for the shift from 8:00 a. m. to 12:00 noon, or 12:00 noon to 8:00 p. m., you find no common basis. By using the plant characteristics, however, it is possible to get a direct comparison and the men not only respond at once, but they do various other things besides economically handling the plant.

It is common knowledge that if there is a difference between the generator units in the plant, the men object at once. They want the best unit on the line all the time, whereas if there is no competition of this kind, there is no special interest taken. If there is a difference between the boilers, if there is a difference in any part of the plant that affects economy, there is immediate demand for the best equipment; the men want the most economical unit or auxiliary or boiler or whatever it may be on their shift. The result is that the most economical units are used continuously and there is prompt complaint

if the less economical ones are not fixed up, because occasionally, of course, they have to be used. The same thing is true of blow-downs, of steam losses by blowing off safety valves, of steam leaks, and of every part of the plant that affects in any way the steam economy. The natural effect is that the efficiency of the plant is kept up at all times—a very great benefit which can only be obtained by some such scheme of comprehensive efficiency records.

J. E. WOODBRIDGE, San Francisco.

SAVINGS THROUGH USE OF MECHANICAL CONVEYORS

O. W. Stiles, manager of industrial transportation of the Lakewood Engineering Company, has compiled some interesting figures for the N. E. L. A. on the savings made possible by the use of electric trucks and other mechanical conveyors. Here are some of his estimates:

One steel manufacturing company finds that the use of a complete system of electric storage battery trucks, tractors and trailers for handling material through their plant saves them \$280,000 per year, with an expenditure of \$1200 for electric energy.

The use of industrial trucks, tractors and trailers is saving fifty thousand dollars a year for the C. M. & St. P. Railway at one of their freight terminals.

By the installation of overhead cranes, the General Leather Co. saved over thirty thousand dollars per year and increased their production over fifty per cent.

By installing conveyors for handling ashes the Ajax Rubber Co. saved fourteen thousand dollars per year.

The Willys-Overland Co. saved three hundred men and eighty thousand square feet of floor space by installing four nine hundred foot conveyors to assemble cars. This installation not only speeded up production, but saved in wages alone three hundred and sixty thousand dollars per year.

Deere & Co., by installing overhead carriers, twelve tractors and the necessary trailers, two electric cranes and conveyors, saved 360 men and approximately \$432,000 per year.

A public service company, by installing four portable conveyors for handling coal from hopper bottom cars to ground storage, saved approximately ten thousand dollars per year.

The Hupp Motor Co., by installing a single locomotive crane, saved over forty thousand dollars per year.

It is through such devices and short cuts in economical handling of material through manufacturing processes, finished products, loading and unloading cargoes and freight, plus proper sales methods that the industrial world is going to be able to meet the demand for the lower production and transportation costs, which are so essential to the resumption of industrial activity.

Western Dealer, Jobber and Agent

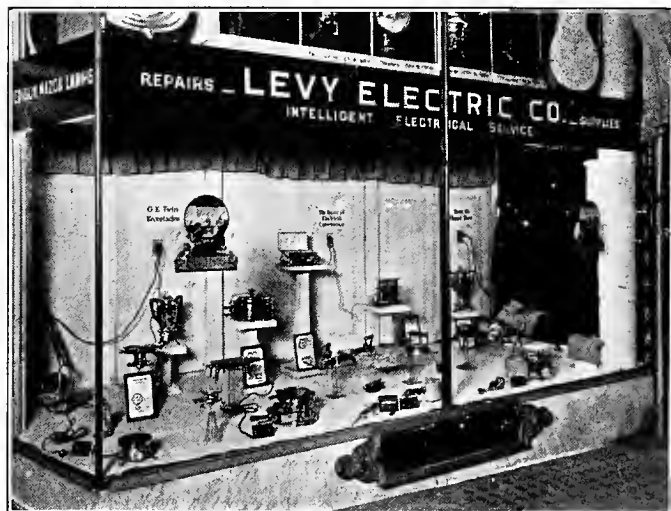
Business building suggestions for the store—
Distribution and warehousing methods—
Advertising and sales promotion ideas

SELLING CONVENIENCE OUTLETS IN STORE AND SHOW WINDOWS.

BY W. F. PRICE

California Electrical Cooperative Campaign

It is a well known fact that the show windows and front portion of a store are the most valuable from a merchandising viewpoint. It is the show window and then the front portion of the store that every customer sees first. The show window is seen



A progressive electrical dealer in northern California is giving life to his appliance display and at the same time keeping the convenience outlet message before the public.

by the thousands of people who pass it each day, and it is the show window that really sells your merchandise.

Then why not take advantage of this valuable space to sell the "Secret of Electrical Convenience," the flush receptacle, along with the electrical appliances and other merchandise? A liberal display of convenience outlets in a show window adds to the value of an appliance display. With either one the other is necessary. So why not display them both together, showing some of the appliances plugged-in? This will do two things, it proves to the satisfaction of the passer-by that you are selling "electrical" merchandise, and shows clearly how convenient it is to use the appliances where convenience outlets have been provided.

There is not a ready market in the home for a full set of electrical appliances unless they can be used conveniently and efficiently. How many times have I heard people say that they would buy this or that kind of an electrical appliance but they had no convenience outlet in which to use it. How many times have people told you a similar story? Do they

always leave your store with a picture in their minds of how convenient it was for you to "plug-in" that vacuum cleaner you just demonstrated, or how nice that percolator and toaster look in the window, are plugged into a duplex receptacle?

Before our convenience outlet campaign among home builders and architects is won, we must educate the general public to think "convenience outlets" when they think of vacuum cleaners, stand lamps, percolators and other appliances, just as they think of the faucet in the front yard when they are thinking of a garden hose. If you use cluster plugs and festoons of lamp cord to connect the appliances in electrical stores and show windows, you may rest assured that with that example set by the electrical dealer the public isn't going to demand very many convenience outlets from the builder; neither is the builder convinced that numerous convenience outlets are necessary in the house he is building when he sees a vacuum cleaner and clothes washer connected to one drop cord in the electrical store or show window.

MERCHANDISING METHODS THAT BRING BUSINESS.

BY EARL T. MILLHAM

At no time in the history of the electrical business has there been a more serious need for high class and unselfish merchandising methods than exist at present. All manufacturers are spreading the message of more activity in selling. This naturally increases factory production. Therefore, the dealer in order to play his part in bringing back better production, and better conditions in general for himself, must increase his selling activity. The public is spending a certain percentage of its income for luxuries, and it seems very possible to get a portion of this for electrical necessities by an increase in selling efforts.

Consistent and snappy advertising is always a business getter. Keep your name before the public as much as possible. Along with advertising, it is always necessary to have attractive and well-arranged window displays. Each display should always tie in with the advertisements that are run in the newspapers or any other medium.

After new customers have been created, it is always good merchandising to extend to them the best possible service, attention and courtesy. A good salesman should always remember to deal with his trade in the same manner in which he would wish

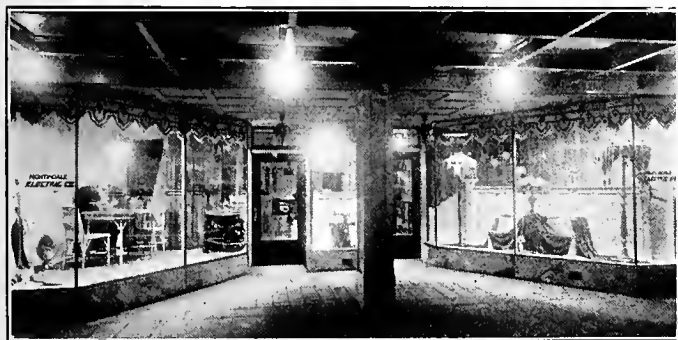
to be dealt with. These three selling features will always hold your customers.

Comfortable and pleasing store arrangements, also, are always essential in building up business.

The merchandising principles of any merchant must be of high standard in order for him to hold his customers and create new ones. If a dealer does not stock a certain manufactured article asked for by a customer, and has tried unsuccessfully to sell a similar article for which he is agent, he should not on any account criticize his competitor's goods. Instead of adopting this selfish attitude, he should advise the customer that it is a good device and is sold by his fellow merchant, The ——— Electric Company. This is one of the grandest policies for any electrical man to follow if he intends to better his standing and help to eliminate that everyday question that is being asked by all of us, namely, "Which is the best electric washer or iron to buy for the money?" It is the selfish attitude and the unfair criticism of each other's goods that have put the public in the dark as to what to buy.

REMODELED STORE HAS SEVERAL ORIGINAL FEATURES.

In spite of the period of depression following war time conditions, a number of electrical dealers are taking steps to prepare for the business ahead. Among these is J. M. Nightingale of Modesto, Cal-



One of these side windows is mounted on castors and can be rolled back to leave space for floor demonstrations. Note the small center window used to feature a single device.

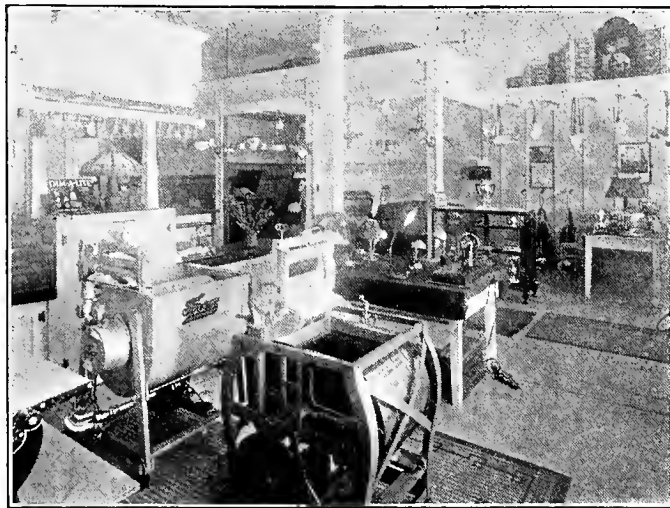
ifornia, whose recently remodeled store is deserving of comment.

The store front has been altered and made inviting by a liberal alcove effect, providing large window space on either side of two doors, which are separated by a small central window. One of the large side windows, consisting of a floor and panel back, is mounted on castors so that it can be moved back against the side wall. This arrangement not only facilitates the arranging of a display but allows an appropriate space for floor demonstration in the window space; following such a demonstration, the window may be moved back in place at night.

The other side window is formed by a floor about eighteen inches above the level of the store floor, conforming to the window base line, with a low drapery background. The low background allows an unobstructed view of the store interior from the outside. In this window the larger appliances

such as ranges, washers, ironers and the like can be displayed attractively. The small center window is most effective in centering attention on one device or a set such as a percolator outfit.

The window lighting is by recessed window reflectors provided with color screens and connected



Fixtures are displayed in four booths, each fixture being operated by an individual switch. Each booth is finished in a different color.

with a flasher so as to give alternate color effects when so desired.

Residence fixtures are displayed in four rooms, or more properly booths, in which only a few fixtures are hung, each controlled by a separate switch. The interior of each booth is finished in a different color tone, which makes it possible to select fixtures for display that give an effect of color harmony.

There are many interesting features incorporated in the basement workshop and storeroom. One item worthy of mention is a small dumb waiter which drops from a convenient place behind the front counter to the repair bench in the basement, providing quick means of communication and exchange in handling minor repair jobs. There is a special room in the basement for metal finishing work in which an exhaust fan vent running to the roof carries off the fumes from the spraying.

USING THE JOBBER'S ADVERTISING DEPARTMENT.

BY M. T. DOLMAN

Are you a dealer making full use of the cooperation the jobber offers you? You say, for instance, that you can make much more money selling the larger appliances. To be sure; go ahead and devote your best efforts to them. But call in your jobber's advertising department to help you sell the little things, and see how quickly your worry about overhead dissipates itself.

The jobber today will write and multigraph letters on your stationery, will give you the necessary window cards to dress your windows properly, will help you with your interior displays. A great many dealers are already taking advantage of this service. So many, in fact, that if you, as a contractor-dealer want a similar service, you must ask for it.



The group of boys who sold \$296.25 worth of electric irons in one week.

APPLIANCE SALES INCREASED BY UNUSUAL MERCHANDISING CAMPAIGN

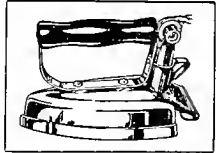
A novel campaign was conducted recently by the Walker Electric Supply Company of Salt Lake City. The manager got together some twenty-five or thirty boys, ranging in age from nine to sixteen years, with the idea of making a house to house canvass for sales and prospects on Hotpoint and Edison electric appliances.

Each morning at eight o'clock, before the boys were sent out to canvass for the day, a meeting was held, giving them their instructions. They were then given a supply of individual prospect cards, to be filled in with data on the prospective customers, together with literature on the Hotpoint appliance being canvassed for that particular day. At the end of the day these cards were turned in to the

Date	Article
Name	
Address	
	Phone
Friends Using Machines	
Price Quoted	Terms
Date Visited	By
Report	
Occupation	
WALKER ELECTRIC SUPPLY CO., 159 SO. STATE ST., Salt Lake, WAS. 4703-4562	
Dealers in Sewing Machines, Washing Machines and Electrical Appliances	

One morning, when the boys were selling the Hotpoint iron exclusively, they were taken over to the Edison Electric Appliance Service Station and a Hotpoint iron was disassembled, showing the construction, heating element, and so forth. The boys were very much interested, as shown by the numerous questions they put to the demonstrator.

The house to house canvass was made as follows: The boys were divided into groups or squads of five or six, and over each group was placed a boy who acted as Sales Captain. Each Sales Captain was assigned a certain part of the city to canvass, and took the boys of his group to this part of town. One square block was canvassed at a time, each house on the block being visited by one of the boys. After the block had been thoroughly worked, the boys re-

\$1  **\$1**

**For Your Old Sad Iron
or any
Old Electric Iron**

Allowance on a New Electric Iron

We sell the Best

Hotpoint, Edison,

ALL GUARANTEED

*Now is Your Opportunity
to get a Real Electric Iron
Cheap*

WALKER ELECTRIC SUPPLY CO.

159 SOUTH STATE ST.

PHONE WAS. 4703



Handbills distributed by the boy salesmen, advertising the one dollar offer on old irons.

ported to the Sales Captain, who received their reports, gave them a new supply of literature, and then started them on the next block.

One of the features of the campaign was an allowance made by the Walker Electric Supply Company, of one dollar for any old sad iron to apply on the purchase price of a new Hotpoint electric iron. This offer was carried to the housewives by the boys, who took the old irons and gave the customer a coupon worth one dollar on the purchase price of the new one. As a result of this offer the boys obtained ninety old irons the first week.

The success of the campaign exceeded all anticipations. During the first week the boys visited 2500 homes in Salt Lake City, actually selling \$296.25 worth of Hotpoint electrical appliances, and accomplishing a great deal of valuable publicity work, to say nothing of collecting the ninety old irons.

\$1 **GOOD FOR ONE DOLLAR** **\$1**
on a Hotpoint, Edison
or any
Electric Appliance
WALKER ELECTRIC
159 So. State St. Was. 4703
By _____

The prospect card and the one dollar coupon used in the campaign. It was noticed that about 25% of the cards were filled out by the lady of the house herself.

manager, who in turn sent one of the regular salesmen out to work on the prospect, providing the prospect could not be sold by the boy salesman. If the sale was made by the regular salesman, the boy turning in the prospect received ten per cent of the purchase price, as his commission on the sale. In addition the boys received fifty cents a day.

Business Outlook in Western Market Centers

Reflecting the Trend of Community Thought on Conditions and Events Affecting
Business and Industrial Activities Throughout the West

SAN FRANCISCO

With the individuals of practically all branches of the building trades returning to work it becomes a question of supplying materials only, before building will resume normal proportions. It is estimated that this will require about sixty days. The building trades strike has depressed general business throughout the Bay district below what would be considered normal under present conditions. The employment of about 3,500 more men in actual building operations will put an equal number at work in the allied trades. The increase in buying power will materially improve general business.

The smaller city banks and the country banks are now in excellent condition. Collections have improved in the last two weeks. Department store sales remain unchanged in volume, and in the amount of average sale. There has been a slight resumption in the export trade which is considered a very favorable indication.

LOS ANGELES

The sound business conditions of the present time owe much to the broad vision of business leaders ten to fifteen years ago, and their ability to gain and hold the support of the public at large; unless the basic idea of ample supply of water, power and adequate transportation—both rail and water—continue to be uppermost in the minds as well as supported in the activities of Los Angeles, the white spot will not last long.

Increased capacity for public utilities required between fifteen and twenty million dollars during 1921, and a large per cent of this was labor. For example, the problem of additional gas supply for immediate needs, is being rushed with all possible speed, and carries with it a payroll in excess of \$400,000 per month.

Reductions in the commodity costs, have more than equalled reductions in daily wages, and the turn over in labor is less than usual, in all lines.

As an Industrial and Trades Exposition to attract buyers, the first comprehensive show of Los Angeles' diversified industries, was a decided success. For four hours each day the doors were closed to all except buyers, this permitted intensive merchandising effort by exhibitors and the satisfactory volume of business well justified the effort. The free admission to the public for the balance of the day and evening, was a good stimulus to the buying of home products, and a liberal education to the 300,000 who took advantage of the opportunity.

SALT LAKE CITY

While there has been no decided change in business conditions in the intermountain section, nor any particularly outstanding features, during the past several weeks, there seems to prevail a more optimistic feeling than for some time.

In mining circles, the lowering of the rate on bullion shipments, which on eastbound shipments has been reduced from \$22 to \$16.50 a ton will be a great boon to the smelters and to the ore shippers.

Bankers report the call for money continues as strong as ever, but interest rates in this section have not shown much tendency to ease up.

Building operations in the larger centers of population continue very active, particularly in the building of homes.

Electrical retailers are advertising their goods extensively, and this, together with reductions in prices, has helped considerably in the sale of appliances. Jobbers' stocks are not moving at a very rapid rate. Contractors are deriving considerable benefit from the building activities.

The local hardware trade reports business fair, with collections improving.

The local lumber trade reports considerable demand for their material, with collections improving.

The employment situation has materially improved, due to seasonal work being provided to a good many men, such as harvesting crops.

PORTLAND

General business conditions in this district continue to improve slowly but surely. Heads of industrial plants, particularly in the lumber industry are more optimistic than for some time past. While they do not feel that business will be as good this fall as last year, they are confident that conditions will be much better during the last six months of this year than during the first six months. Retail trade continues good, with wholesale buying for fall and winter requirements picking up. Building activity, resumption of operation of some logging camps and lumber mills, harvesting, berry and fruit picking, hop picking, road work, and increased industrial activity have brought an almost normal condition of the employment situation. Wheat exports continue to increase and the receipts of wheat from the interior show an increase of over 300 per cent over the corresponding week last year, while the receipts for the year to date show an increase of over 200 per cent over last year. Bank clearings and building permits are holding up well,

the building permits issued during the past week being in excess of a quarter of a million dollars. Electrical contractor-dealers and jobbers report little change over the first two weeks of August, although they predict an improvement in the early fall.

SPOKANE

Electrical jobbers report a slight increase of business and more numerous inquiries since the first of August. The fact that threshing has shown the early estimates of a bumper crop to have been well founded, generally, throughout the Inland Empire has given a more substantial basis for the hope of bettering conditions this fall. Abundance of hay and good pasturage is causing jubilation among sheepmen as is also the increased price for good range ewes which are now in demand at from \$8 to \$10; double the price gotten in June. Anticipation of the benefits to be derived from the emergency tariff is having a good effect on the sheep industry.

The mines in the Coeur D'Alenes expect improved conditions as the result of the tariff and the feeling is prevalent that the lead mines of the district will open up shortly after the tariff becomes operative.

Along with abundant grain crops, it is anticipated that the fruit yield this fall will be one of the largest ever harvested. Home building in Spokane continues active with the promise of accelerated movement into and through 1922. Generally the outlook is for very satisfactory liquidation and a creditable amount of business this fall. As one man puts it, "The worst months of 1921 have passed and things are getting better."

SEATTLE

Conditions in Seattle specifically and the Puget Sound District generally, continue showing slight improvement, although far below normal.

Home building is active and a decided increase in business building is noted. Projects of considerable magnitude, involving the expenditure of from \$50,000 to several hundred thousand dollars, calling for the erection of apartment buildings, commercial garages, theatres and structures of like nature, have been started and from present indications, much work which has been held up for various reasons, will be under way within the next 30 days. A more or less ambitious building program started by the Seattle School Board calling for alterations and additions to existing grade and high school buildings, has done much to relieve the tension which has prevailed during the summer months in Seattle.

Activities of the West

A Business Man's Department Devoted to Events and Developments in Western Industrial Centers—Including News of Interest to Readers in Public Utility, Industrial and Trade Fields

Electricity Aids in Establishing Shaft Sinking Record

Using electrically operated machinery, the miners of the Walter Fitch, Jr. Company, of Eureka, Utah, broke the world's record for shaft sinking, when they completed on August 15th, 427½ feet of a vertical three-compartment shaft on the Water Lily property of the Chief Consolidated Mining Company near Eureka, Utah.

This record exceeds by 117½ feet the best previous record made by miners, and was completed in thirty-one consecutive days by three shifts of men. As a result of this achievement the company will receive a gold medal and the qualified members of the crew will be awarded the silver medals offered by the Engineering and Mining Journal of New York, which established the conditions governing such contests. The men will also receive cash bonuses paid by the mining company. The best previous record was made by the Crown Mines, Ltd., at Johannesburg, South Africa, with a distance of 310 feet.

Operating continuously, and losing but thirteen hours for repairs and power interruptions during the entire thirty-one days, the crew, composed almost entirely of American miners, made a record which mining men in the district believe will stand for a long time.

Construction Work on Calaveras Dam to be Suspended

In a decision recently handed down by the California State Railroad Commission in the Spring Valley Water Company rate case, the Commission has worked out a cooperative agreement to be entered into between the city of San Francisco and the utility whereby the Spring Valley system and part of the Hetch-Hetchy project are to be used in conjunction. The arrangement is designed to obviate possible duplication and sustains the protest of the City of San Francisco against authorizing the Spring Valley Water Company to spend \$12,000,000 on the Calaveras Dam with additional conduit and pumping facilities. Provision is also made to permit the purchase of the Spring Valley system by the city at any time in the future.

An expenditure of \$1,500,000 by the Spring Valley Water Company is authorized, which will increase the capacity of the Calaveras Dam so as to produce 24,000,000 gals. additional water supply, provisional upon the City of San Francisco constructing the section of its proposed Hetch-Hetchy conduit from Alameda Creek to Crystal Springs reservoir in San Mateo County. The Water Company is to pay not to exceed

\$250,000 a year to the city for the use of the conduit and to bear all operating expenses. In order to carry out this construction program the Commission finds that the present rates are insufficient to maintain the Company's credit and holds that a fair return requires an average increase of water rates of 20%, effective September 1st. During the life of the cooperative plan the Spring Valley Water Company is required to sell its properties to the city at the \$37,000,000 valuation fixed by the Commission in November 1920, plus the cost of additions and betterments, in event the city desires to purchase the system.

The Northwest Lumber Industry Renews Activities

Renewed activity among the sawmills and logging camps of the Willapa Harbor district, of which Raymond, Wash., is the metropolis, bids fair to make the month of August a record breaker in the volume of lumber shipments. With a monthly payroll of \$500,000, Raymond has been a constant bright spot in the state during the recent depression. Early in August employment for more than 850 men in mills and camps, in addition to those already employed, was secured in the Raymond district.

According to a recent check made by Puget Sound lumbermen, more than 20,000,000 feet of lumber for house construction will be carried from Puget Sound to Japan in August and September, the shipments forming one of the greatest movements of the kind in recent years. In addition to the Japanese movement, it is estimated that approximately 11,000,000 feet of railroad ties for railroad work in China will also move from this district in the next two months. Every trans-Pacific ship now leaving Puget Sound ports is carrying from 250,000 to 1,000,000 ft. of lumber for Japan, the shipments consisting of 4 x 4s and 5 x 5s mainly, in lengths of 10 and 13 feet. As a consequence of the demand for lumber in these sizes, the steamship companies are rejecting offers of shipments of big Japanese squares and logs. The steamship rate on lumber and logs is the same, \$12.50 per M ft., but the logs take up so much more space than the lumber that the steamships' revenues from them is lower than from the lumber. The movement to Japan is regarded as a forecast of how the Northwest lumber industry will prosper when France, Belgium and Great Britain succeed in getting their affairs on a normal basis and enter the lumber markets.

Electrical Service in Vancouver in Critical Position

Urgent need of further electrical development is the principal argument used in Vancouver, B. C. to obtain the passage of a new franchise for the British Columbia Electric Railway Company. The proposed franchise is of the "service at cost" type and covers electric railway, light, power and gas service. At a recent meeting of the Retail Merchants' Association, Mr. George Kidd, general manager of the company, said that the power resources of the company would be exhausted at the present rate of progress in about a year. At another meeting, Mr. John R. Read, local manager of the Canadian Westinghouse company pointed out that the unemployment problem would be partly solved by promoting further electrical development. Besides the construction of a new power plant, he recited the extension of light and power to West Vancouver, Rosedale and other sections, now unable to go ahead owing to lack of funds. In one section of Vancouver no electric range business will be accepted owing to the feeders being inadequate. These arguments are being used to obtain stability for the B. C. Electric Railway Company. In the event of the franchise being turned down, the alternative proposed is the bringing of the company under the control of the federal railway commission of Canada.

Right of City to Sell Power Upheld by Court

The right of a municipality to sell electricity developed from municipally owned water projects has been upheld by the Supreme Court of the state of California. The decision was arrived at in an injunction suit brought by the Los Angeles Gas & Electric Company to restrain the city of Los Angeles from distributing power developed at the San Francisquito plant on the Los Angeles aqueduct through the systems of the Pacific Light & Power Corporation and the Southern California Edison Company. In this particular case the city's distribution system could take care of about 10 per cent of the energy developed at the San Francisquito plant and the city council was confronted with the problem of disposing of the remaining power, which it did by contract to the two companies mentioned.

The decision has a bearing on the proposed plan of the city of San Francisco to sell power developed in the Hetch Hetchy municipal water project to the Pacific Gas & Electric Company.

Los Angeles Harbor Improvement May Be Suspended

Los Angeles Harbor improvements are threatened with a shut down. It now looks as if the bonds for the construction of \$1,200,000 in harbor facilities, will be sidetracked for months, because of the rash action of the city council in attempting to sell the \$13,500,000 power bonds. In selling the power issue to the Hellman interests the council agreed not to market any other bonds until after sixty days following the delivery of the power bonds. The bids for the \$1,200,000 were to be opened August 2, but they voted to return all bids unopened.

This is almost a calamity for the harbor, as the agreements with the railroads and the U. S. Government can not be carried out until some of this money is available. Every effort is being made to undo some of the harm resulting from the unwise action of the council.

Washington Coal Mines to Reopen on Non-Union Basis

Preparations to reopen the commercial coal mines of Washington, closed since April 16, on a basis which ignores the United Mine Workers of America, and adopts the downward wage revision proposed by the All-Port Commission, have been completed. To protect the mines against any eventuality, 200 guards, bearing special deputy sheriff commissions, have been distributed about the mines in King and Pierce counties, to preserve order. The new wage scale, based wholly on the 8-hour day, follows:

Contract miners, piece work, at prices that will range from \$7 to \$14 per day.

Day scale men, underground, \$6 per day

Common labor, underground, \$5.25 per day

Day scale men, above ground, \$6 per day

Common labor, above ground, \$4.50 per day.

In connection with the new scale, the operators' statement says it is their intention to make every possible reduction in the selling price of coal which reduced production costs will permit.

Make-up of Advisory Committee California Campaign Changed

At the meeting of the Advisory Committee of the California Electrical Cooperative Campaign, held at the Palace Hotel, San Francisco, April 18th and 19th, 1921, the manufacturers were requested to appoint a manufacturer representative at large to the Advisory Committee.

Pursuant to this request the manufacturers met on April 20th, at which meeting Mr. E. N. Brown presided, and the following Resolution was passed:

"Resolved: That the membership of the Advisory Committee of the California Electrical Cooperative Campaign be increased to twelve through adding one additional manufacturer and one additional jobber;

That representation be divided between the northern and southern members with the object of maintaining workable units of the advisory committee in each section;

That provision be made by by-laws, or otherwise, for the automatic retirement annually of four members of the advisory committee—one each from the manufacturers, the jobbers, the con-

tractor-dealers and the central stations, and that each of these branches of the industry be expected to appoint its own representative as the incoming member;

That a chairman be appointed to call a meeting of all manufacturers contributing to the California Electrical Cooperative Campaign, such meeting to be held Monday, May 2, 1921, immediately following the Electrical Development League luncheon, and that this meeting select an additional manufacturers' representative member of the Advisory Committee of the California Electrical Cooperative Campaign."

At the regular meeting of the Advisory Committee held at Los Angeles, August 1st and 2nd, 1921, the following motion was made and carried:

"Moved by Mr. Harper, seconded by Mr. Van Kuran, that the Resolution of the manufacturers under date of April 20, 1921, be adopted and put into effect immediately and all contributors to the Campaign shall be so notified.

Oregon's First Electrical Home Soon to be Opened

Final arrangements have been made for the first electrical home in the Northwest which is being constructed for a prominent doctor of Astoria, Oregon. Being ideally located in one of the best residential sections of the city and of the best construction and latest design, a successful showing is assured. The home is being patterned after the electrical homes of California and those who visit it will find here a home properly illuminated and provided with adequate convenience outlets to accommodate some 50 electrical household devices all designed to beautify as well as lessen the work in the home. Furnishings for the exhibit are being furnished by a large furniture concern of Astoria and electrical devices are being supplied by electrical jobbers.

The home will be open for inspection from September 14th to 18th and will be flood lighted at night. Streamers will be strung along the principal streets leading to it. Advertising will be carried in the newspapers and street cars and invitations will be sent by mail to visit and inspect the home. Arrangements and details were worked out and perfected by W. D. Moriarty, field man for the Northwest Electrical Service League and F. R. Whittlesey, state secretary of the Oregon Association of Electrical Contractors and Dealers.

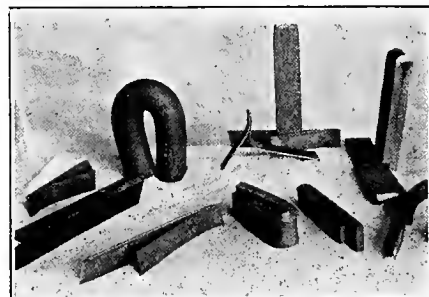
Electrical Industry Survey For Southern California

Realizing the inability of the ordinary person to grasp the importance of the electrical industry in Southern California, the Electric Club of Los Angeles at its last meeting, appointed a committee to make a complete survey of the electrical industry to determine the capital invested, the number of individuals engaged, the gross annual receipts, the purchasing power, the amount of payrolls and other important data. With this information the club proposes to educate the public and industry in general, in the aims, operations and possibilities of the full development of electricity in the southwest.

Test Proves Pacific Coast Steel of Superior Quality

Steel that enters into the construction of transmission line towers is being manufactured by the Pacific Coast Steel Company, of San Francisco, with the following minimum specifications: yield point, 45,000 lb. per sq. in., ultimate strength, 60,000 lb. per sq. in., and 22 per cent elongation. This product is a carbon steel from open hearth furnaces. The possibility of producing a carbon steel with these unusual specifications on the Pacific Coast had been questioned and to refute this a test was arranged and conducted at the plant under the direction of C. T. Wiskocil, associate professor of civil engineering, in charge of the Materials Testing Laboratory of the University of California. The test was conducted in the presence of a representative gathering of engineers.

Samples of steel angles were selected at random from a stock of more than 1,000 tons of tower steel of various thicknesses, and tested on a 200,000-lb. Reihle universal testing machine. The average of the tests showed that the steel had an elastic limit of 46,800 lb. per sq. in. by the drop of the beam, a breaking strength of 68,400 lb. per

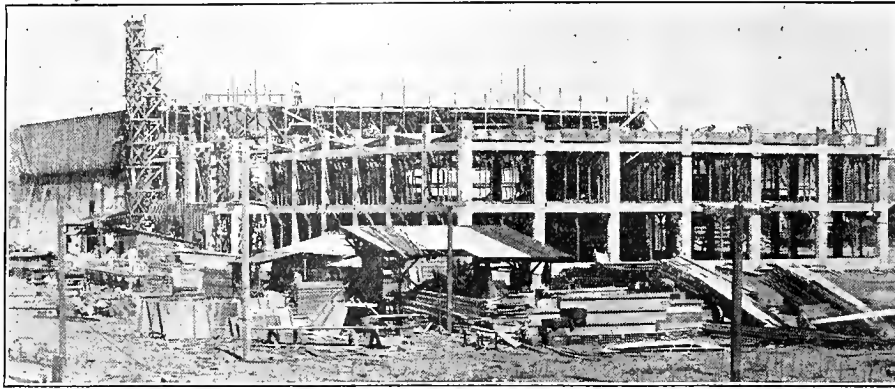


Test pieces of steel made by the Pacific Coast Steel Co., of San Francisco, to meet the following specifications: Yield point, 45,000 lb. per sq. in., ultimate strength, 60,000 lb. per sq. in., minimum elongation, 22 per cent.

sq. in. and an elongation of 25.2 per cent. Steel of this quality has been furnished for the 165,000-volt line of the Great Western Power Company and the 220,000-volt line of the Pacific Gas & Electric Company, and a record of 217 tests made upon this material indicate that this high average has been uniformly maintained.

Shipments of salmon from Seattle to the Atlantic Coast during the months of July and August showed enormous increases over early months of the year, as is shown by a report recently made public by the Seattle Chamber of Commerce. In March, the shipment totaled 8,287 cases, in June the movement jumped to 51,161; in July, 97,000 cases. During August the shipment will total at least 280,000 cases.

The Electrical Industry was effectively represented in the Los Angeles Industrial and Trade Exposition, August 15-20, taking form in working demonstrations of household convenience appliances, motor devices, and a lighting exhibit covering industrial as well as residence applications. Local electrical interests financed the exhibit, and A. L. Spring of the Cooperative Campaign is in full charge.



New \$400,000 plant of the Portland Vegetable Oil Mills Company, Portland, Oregon.

Portland Vegetable Oil Mills Plant Nearing Completion

Although construction work did not begin until June 1st on the \$400,000 plant of the Portland Vegetable Oil Mills Company, the buildings are now nearing completion and the plant will be in operation early in October. The plant is located at the foot of Nicolai street on the Willamette River and is provided with a wharf where the largest ocean steamers may dock. The discharged copra (dried coconut) will be carried to the copra storage bins on conveyors, thence to the main plant, where it will be ground and refined and manufactured into soaps, toilet articles and the various other products made

from a coconut oil base. Three separate reinforced concrete buildings, each approximately 100x100 feet in dimensions and two stories high, will provide space for the necessary machinery and equipment to turn out the products. The concern will employ 75 men with a monthly payroll of \$12,000. The plant will be electrically operated throughout and will have an installed motor capacity of 800 hp. Importation of \$5,000,000 worth of copra annually will be required to supply the plant.

The Portland Vegetable Oil Mills Company is one of the few large Portland companies to be financed entirely with local capital, which attests to the value placed upon home industry by the people of the community.

\$1,000,000 Northwestern Electric Preferred Stock Issued

The Northwestern Electric Company, of Portland, Oregon, is beginning an active campaign in its territory to market \$1,000,000 of 7% cumulative first preferred stock. It is to be sold at 95, to yield approximately 7% per cent. The original 6% preferred stock, of which there is \$1,870,300 outstanding, is convertible into this issue at the rate of one share of the original for nine-tenths share of first preferred. The proceeds are to be used for extensions and additions to take care of new business. Consideration is also being given to the construction of an 8000-hp, hydroelectric station below the company's present station on the White Salmon river. This will be the first active attempt of this company to place its securities directly and with its own consumers.

The Farm Bureaus of California, in a number of cases, are going on record as opposing the encroachment of city on the farm districts in the matter of power control. The trend of their thought seems to be that if state income is largely raised from taxing privately owned public utilities, from which taxation the municipally owned utilities are exempt, the country districts are placed at a great disadvantage in respect to power supply. The subject matter was a resolution by a number of the farm bureaus of Southern California recently, and also by the state farm bureau meeting at the University of California on Thursday, August 9.

Preparation for Construction Work on Skagit Project

Following the approval of the Seattle city council, of a \$5,500,000 bond issue for the Skagit River hydroelectric project, chief engineer C. F. Uhden in charge of the work, is preparing to begin construction work on the 11,000 foot tunnel to carry water from the dam site to the power house at Gorge Creek. The construction of this tunnel, which will be driven through solid granite, and which will be 23 feet in diameter, is the largest single undertaking in connection with the development of the Gorge Creek unit, of the Skagit Development. This work alone is estimated to cost approximately \$2,000,000.

Tunnel Connecting Lake Almanor and Butt Valley Completed

With the completion of the lining of the 11,200 foot tunnel connecting Lake Almanor with Butt Valley the Great Western Power Company's Caribou plant can be operated to capacity. This tunnel, known as Tunnel No. 1, has a capacity of 800 second feet and its construction presented some of the most difficult problems of the entire project. From Lake Almanor, which is the largest artificial reservoir in the world, the water flows to Butt Creek, thence to an impounding reservoir behind the Butt Valley dam, through Tunnel No. 2 to pipe lines leading directly to the power house. Previous to the completion of Tunnel No. 1, the Caribou power plant has been operating on the stream flow of Butt Creek.

Manufacturers' Association Undertakes Important Survey

From its Oakland headquarters, the California Manufacturers' Association, of which J. R. Millar is president, and Fred Boegle, Jr., secretary, is undertaking a survey that should have a most important effect upon the upbuilding of industry throughout the West. The association includes in its membership practically all representative factories in the State of California. The survey is being conducted to determine the subjects in which the members of the association are most vitally interested. Thirty subjects are listed. The service department of the association endeavors to keep its members informed on all subjects listed, particularly those in which a special interest is indicated. This information is distributed in bulletin form from time to time. In an interview with Mr. J. R. Millar, president of the association, Mr. Millar had the following to say to a representative of the Journal of Electricity and Western Industry:

"The Industrial Relations Committee, in conference with industrial leaders and experts of the state, has formulated a Declaration of Principles regarding employment relations that covers comprehensively and fairly our present changed economic conditions. There never was a time in the industrial history of this state that we needed to get together more than we do today.

"Personally, I am very much pleased to hear of the interest that you and your splendid journal of engineering and western industry have manifested in this most important undertaking. I have before me a copy of the Journal of Electricity and Western Industry and desire to take this opportunity to compliment you on its general make-up and contents.

"Our increasing state of national problems made the immediate formation of a state manufacturers' association imperative. Manufacturers in thirty-six states maintain strong and successful associations. California, although ninth in industrial rank, has never had such an organization until now.

"We are trying diligently to unite the diversified manufacturing interests of the state in one strong, non-political organization to cope with our peculiar problems of legislation, labor, traffic, foreign trade and other important subjects, without infringing upon or overlapping the work of other organizations. Our affiliation with the National Association of Manufacturers is a most valuable connection, as it brings us closely in contact with national problems.

"The accomplishments of our association during the last legislature have proved what can be done by the manufacturers if they will but stand together. But it is necessary that we be united not only while the legislature is in session, but that we build our organization solidly in advance of each session, so that hostile law makers will find us more powerful and more widely representative at each biennial."

Actual operation of the first wheat pool to be established in the United States by growers was recently announced by Walter Robinson, of Spokane, acting manager of the Northwest Wheat Grower, Associated. The organization includes wheat growers of Washington, Oregon, Idaho and Montana, and plans contemplate pooling of 35 to 40 million bushels of wheat this season.

The California-Oregon Power Company has extended their service about ten miles into a comparatively undeveloped field. Their new transmission line runs from Klamath Falls, Oregon to Algoma on the upper Klamath Lake where the Algoma Lumber Company now operates a mill.

Washington Electrical Men Meet at Yakima, Sept. 16, 1921

The annual convention of the Washington Association of Electrical Contractors and Dealers will be held at Yakima, Washington, on Friday and Saturday, September 16 and 17, and according to present indications there will be not less than 125 men of the trade present when the first session opens in the rooms of the Yakima Chamber of Commerce.

According to an unofficial program announced by Forrest L. Smith, executive Secretary of the Association, Arcade Building, Seattle, the morning sessions of the convention will be given over to business; the afternoon meetings to educational topics and discussions.

The program includes an address of welcome by Mayor R. D. Rovig, of Yakima, to which S. G. Helper, of the Arrow Electric Co., Seattle, president of the Association will respond; a report on the results of the electrical campaign in Tacoma; a talk on the electric range situation in Spokane, and three minute talks by delegates in attendance on various electrical subjects.

Addresses on such timely subjects as "Cost Accounting," "Industrial Illumination," "State Laws," and similar themes will be delivered and discussed.

The delegates will be the guests of the Yakima Electrical Service League, which organization will entertain the visitors at a banquet on the 16th, and a tour to the Rimrock Irrigation Project on the afternoon of the last day of the convention.

The officers of the Washington Association of Electrical Contractors & Dealers are: S. G. Hepler, president; J. J. Agutter, vice president, Seattle district; V. S. McKenny, vice president Seattle district; R. E. Wheeler, Toppenish, vice president, Yakima district; A. S. Clark, vice president, Bellingham district; A. J. Gladson, Yakima, and W. M. Meacham, Seattle, members of the advisory committee.

Added Impetus Given Portland as Grain Port

Portland was voted as the official export base of the Northwest Wheat Growers' Association, the selling medium of the Oregon, Washington, Idaho and Montana Wheat Growers' Association, at a recent executive meeting of the trustees held in Spokane. This means that these organizations are to ship their grain through Portland to the world markets. The action was taken largely as a result of the 10 per cent differential over Puget Sound ports recently granted Portland by the Interstate Commerce Commission. Many millions of bushels of wheat annually will thus be added to the grain exported from this port, already one of the largest grain exporting ports of the Northwest.

Boise, Idaho Will Be Convention City Next Year

At an executive committee meeting of the Northwest Electric Light & Power Association held in Portland recently, Boise Idaho was selected as the place for holding the next convention, in June 1922. The 1921 convention was held in Portland during June. W. R. Putnam, the new president, came from Boise to attend the committee meeting and with him came the new secretary-treasurer, J. F. Orr, sales manager of the Idaho Power Company, whose headquarters is at Boise.

Chairmen of the four executive committees of the association sections were chosen at the meeting as follows: Accounting section, J. S. Simpson, Spokane; commercial section, A. C. McMicken, Portland; public relations section, W. H. McGrath, Seattle, and technical section, Markham Cheever, Salt Lake City.

The public relations section of the association has been particularly active during the past year and adequate funds to take care of the work in the various states has been appropriated for the ensuing year. This subject is considered of such vital importance that one full day will be devoted to a complete discussion of all phases of the subject of public relations at the forthcoming convention. The new president expressed himself as being of the opinion that the question of public relations should be the outstanding subject for the new association year.

In view of the fact that this is the first time the Northwest convention has been held outside the states of Oregon and Washington, the program committee will make an extra effort to provide a good program, to revive greater interest in association affairs in Idaho and Utah.

The Northwest Electric Light & Power Association expects to maintain its representation of the advisory committee of the Northwest Electrical Service League and give the League its whole hearted moral and probably some financial support.

Members of the American Institute of Electrical Engineers and members of the Vancouver Electric Club were the guests of Capt. Leigh and Commander Jones of the U. S. "Tennessee" for a tour of inspection of that American Navy vessel Sunday morning, August 7th, 1921. About fifty members of the two organizations were met by a launch from the "Tennessee" at the Immigration dock at ten in the morning and taken to the ship. Here in small groups the party was shown over the ship and returned to the dock in time for lunch. All arrangements for the excursion were made by J. R. Read of the Westinghouse Company.

Portland A. I. E. E. Hears Discussion of Telephone Developments

A special meeting of the Portland Section of the American Institute of Electrical Engineers was held August 11, to which all engineers of the city as well as others interested were invited to listen to a talk on, "Recent Plant Developments," by Mr. F. L. Rhodes, Outside Plant Development Engineer of the American Telephone & Telegraph Company, of New York. The speaker touched on the early history of the telephone and told of the advances made in the art of telephony and wireless telephony during the war and concluded by explaining the carrier system, or duplex telephony, in a very interesting non-technical manner.

A number of prominent telephone engineers and telephone officials participated in the discussion, among whom were: C. O. Bickelhaupt, Commercial Engineer of the A. T. & T. Co., of New York; F. H. Leggett, Sales Manager of the Western Electric Co., of New York; H. D. Pillsbury, Vice President of the P. T. & T. Co., of San Francisco; C. E. Fleager, Plant Engineer, and James T. Shaw, Attorney for the P. T. & T. Co., of San Francisco.

The occasion for the presence of so many prominent telephone men in the city is the re-hearing of the Pacific Telephone & Telegraph Company rate case in Oregon, which has been in progress for several weeks.

Salt Lakers Celebrate Electrical Day at Lagoon

Friday, August 5th was set aside by the contractor-dealers, manufacturers, jobbers and power company people of Salt Lake City as "Electrical Day." An outing arranged by the Rocky Mountain Electrical Cooperative League, was held at Lagoon, a beautiful summer resort located about fifteen miles north of Salt Lake on the line of the Bamberger Electric Railroad, which was attended and thoroughly enjoyed by the members of all the branches of the electrical industry and their families. All the electrical establishments of the city were closed for the afternoon, and everybody went to the "party."

Valuable prizes, consisting of electrical appliances, ranging from flashlights to twin Radiant Heaters, were awarded the winners of a series of athletic events arranged by the entertainment committee. In most of the events the competition was very keen.

The get-together spirit, which has been so successfully cultivated by the Rocky Mountain Electrical Cooperative League since its organization, was very much in evidence, and the affair was an unqualified success.

"Electrical Day" is going to be an annual event hereafter with the electrical people of Salt Lake.



Rocky Mountain Electrical Cooperation League Gathering at Lagoon

Contractor-Dealers Secede

California Association Favors Forming Western Organization

Resolutions which amount to a withdrawal from the National Association of Electrical Contractors and Dealers and the immediate formation of an independent western division, together with the states of Oregon and Washington, were adopted by the California State Electrical Contractors and Dealers Association at their annual convention held on August 27, at the Hotel Claremont, Berkeley. This action follows a correspondence of several months which has been carried on relative to the appointment of a field representative on the Pacific Coast. The western associations felt that they could not support such an institution at the present time, and as their alternative proposition was not acceptable to the national body, they have withdrawn in order to establish an organization which they feel will bring the west coast closer together.

Several changes in the constitution were also approved at this time which provide for the operation of the geographic sections within the state and the holding of executive committee meetings twice instead of four times a year.

Informative reports were made by the Westinghouse Company on their policy in regard to service on motors and by Mr. McGinty of the Royal Insurance Company who explained the question of motor insurance and its effect on the business of the electrical contractor.

The specification writing committee presented the results of their investigations with regard to the complaints made against specifications for wiring jobs. They reported that most of the specific complaints were traced to the ignorance of architects in electrical matters. The committee, however, found certain justifiable objections to specifications as sometimes written by manufacturers and engineers and recommended that the following principles be accepted as fair practice:

1. No insinuations should be included in the specifications which would imply that other makes are inferior, nor should a price reduction be required if standard materials are substituted.

2. That clause which makes the contractor liable for mistakes of the engineer should lead wires not prove of size to the load should be eliminated.

3. All jobs should be on the partial payment basis and such clauses as provide for completion before payment should be modified.

One of the most active discussions of the day centered about the question of central station policy in the merchandising of electric ranges. Capt. Jackson of the Great Western Power Company and R. E. Fisher of the Pacific Gas and Electric Company reported on the policies outlined by their respective companies in the matter of range sales and stated their willingness to work out the problem along the lines which would bring best results and which at the same time would prove fair to all branches of the industry. Such interest was manifested in the subject in the short time available that it was felt

Meetings of Interest to Western Men

that opportunity should be given for further discussion and an open meeting is to be arranged for the near future at which this subject will be threshed out. The Great Western Power Company will be represented at this meeting and all who are interested in the subject are invited to attend. Announcement of the date will be made later.

H. N. Nelson of the Enterprise Electric Company read a stimulating paper on the merchandising problems of the immediate future. He urged a restriction of the credit relationship between the jobber and the dealer. The dealer on his part should learn to borrow from his bank rather than from his jobber. On the part of the jobber he urged the adoption of terms which would allow a 5 per cent ten day discount and 30 days net on bills.

Earl Brown, of the Brown-Langlais Company, San Francisco was chosen president for the coming year and the following members of the executive were ratified:

For the north: T. E. Bennett, Rex Electric Company, San Francisco, and R. V. Oyler, Capitol Electric Company, Berkeley.

For the south: Louis Gans, Gans Bros., Los Angeles, and H. L. Miller, H. L. Miller Company, Pasadena.

A most delightful banquet finished off the day. 175 people were in attendance and brief remarks from representatives of each branch of the industry complimented Clyde Chamblin on the work of his administration and expressed confidence in the prospects for the coming year under Earl Brown. John L. McNab made an eloquent address as the principal speaker of the evening.

Electrical Men of Denver Start Cooperative Campaign

An active campaign for the betterment of the electrical industry in Denver was launched recently by the Electrical Cooperative League of that city. Laurence W. Davis, special representative of the National Association of Electrical Contractors and Dealers, was the speaker at a dinner and meeting attended by 150 electrical men.

The meeting was arranged by the Electrical Cooperative League, the newly formed electrical development organization of the Mile High City. The league secured Mr. Davis' services for the month of August and as a starter had him outline the campaign and ex-

plain the value of the work which will be carried on.

Announcement was made at the banquet, of the league's plans for constructing and exhibiting a modern electrical home in the near future.

Standardized service of a cooperative nature was strongly urged as was more widespread cooperative advertising with a view to educating the public as to the economy and use of electricity. Announcement was made by Mr. Davis of the coining of the word, "electragist" and its use in lieu of the generic classification of the words "electrical contractor-dealer."

Meetings of the smaller groups represented in the Denver League were scheduled and following the plan of bringing the subject to the attention of the general public arrangements were made for Davis appearing before the Lions, Kiwanis and Rotary Clubs and similar commercial and civic organizations.

T. O. Kennedy, chairman of the League Advisory Committee, presided. The committee in charge was J. W. Ryall and Clarence Keeler, assisted by Sidney W. Bishop, the executive manager.

California Agricultural and Industrial Association Activities

Under the leadership of J. H. McDonough, the California Agricultural and Industrial Association is formulating plans for twelve distinct departments of work. Among the leaders in this work appear such prominent names as F. J. Koster, W. J. Dutton, R. B. Hale, A. B. C. Dohrmann, E. W. Clapp, J. R. Henderson, Jr., Wyllie M. Giffen and George Pierce.

Some of the activities that will be under way in the near future are research and investigation concerning agricultural and industrial relationships; coordinating of statewide activities looking toward closer cooperation; development of markets; installation of industrial and agricultural exhibits; development of intensified interest on the part of the membership; instituting of a closer service to chambers of commerce throughout the state; putting into practice of more helpful publicity and the getting together for symposiums business men having varied interests to forward better agricultural and industrial relations. N. H. Sloane, secretary of the Association, meanwhile is planning for a powerful group of meetings to be held in the Fall.

The San Francisco Section of the American Society of Mechanical Engineers has placed itself squarely on record as favoring the taking of an active part by the engineer in civic affairs.

COMING EVENTS

INTERNATIONAL ASSOCIATION OF MUNICIPAL ENGINEERS
Colorado Springs, Colo.—Sept. 6-9, 1921

ROCKY MOUNTAIN DIVISION N. E. L. A. AND COLORADO ELECTRIC LIGHT, POWER AND RAILWAY ASSOCIATION
Glenwood Springs, Colorado, Sept 19-22, 1921.

WASHINGTON ASSOCIATION OF ELECTRICAL CONTRACTORS AND DEALERS
Yakima, Washington, Sept. 16 and 17, 1921.

Ben C. Holst, some years ago associated with the Western Electric Company in its western office but recently located in the central station serving Montreal, Canada, has again returned to the West as western district manager of W. N. Mathews & Brother, Inc., St. Louis, Mo. Mr. Holst's company handles fuse switches, lamp guards, anchors and other electrical equipment. He is coming back to the Pacific Coast enthused with the possibilities of up-building of the West electrically and an earnest desire to have a part in this work. He will locate in San Francisco.

The McGlaulin Manufacturing Company has been purchased by C. H. Johnson and M. H. Grover, Jr., who will rebuild the factory and install new equipment for the manufacture of eucalyptus insulating pins and brackets for the electrical trade on the Pacific Coast. Mr. Johnson is president and sales manager and Mr. Grover will be factory manager. Sales offices will be maintained in the Rialto Building, San Francisco.

The Edison Storage Battery Supply Company has recently opened a branch office in the San Fernando Building, Los Angeles, with C. E. Poyer as resident manager. With many years' experience at the factory to his credit, Mr. Poyer anticipates much activity and better service in the electric industry as a result of this factory branch office.

Charles C. Snyder has been appointed branch manager of the Los Angeles office of the Coast Equipment Company and will have offices at 514 Central Building, Los Angeles. Mr. Snyder is a graduate of the Engineering Department of the University of California and was for a time employed in the Petroleum Division of the Santa Fe Company as electrical engineer. He also served the U. S. Engineers in the A. E. F. in France. Mr. Snyder's theoretical and practical training and broad acquaintance with men of the electrical industry will particularly fit him for his new field of activities.

Glenn E. Arbogast, formerly known as the manager of F. E. Newberry Electric Company of Los Angeles, has now under the reorganization of his company taken over the principal control. Mr. Arbogast is one of our best known electrical contractor dealers in the West. He has served as president of the Southern District of the California Association of Electrical Contractors and Dealers; he has been prominent on the California Electrical Co-operative Campaign, and all activities looking toward the betterment of industry.

H. H. Courtwright, general manager of the Valley Electric Supply Company of Fresno, is reorganizing his establishment and emphasizing the contractor end of the business. To this end he is standardizing installation work connected with electric pumping plants and other industrial activities. His new establishment devoted to motor repair work has now been in complete operation for some months and represents a model of its kind in overhauling all sorts of repair work.

Robert Oyler, long associated with the Capital Electric Company in Berkeley, has sold his old shop to his partner, Dunn, and has now opened up a new shop near the corner of University

Manufacturer, Dealer, and Jobber Activities

Avenue and Shattuck Avenue in Berkeley. He is featuring the sale of household appliances and wiring, but is not handling motor repair work. His window arrangement and the interior arrangement of his store are attractive and very pleasing.

A. Huppli, Jr., eastern representative of Journal of Electricity and Western Industry, with headquarters in Chicago, who is in constant touch with manufacturers and business men generally, states in a recent letter that business conditions in the East have begun to ease up. Stocks have been liquidated to a great extent and there is quite a little buying in certain directions. Money rates have been reduced and although they have not quite hit the pre-war level, they are very close to it and there is every indication that there will be a gradual and steady resumption of business in the fall.

The Comet Electric Co., of Roseburg has been incorporated by Howard A. Uhlig, W. D. Coburn and Willie Uhlig of Klamath Falls, with a capital stock of \$2500. The company will manufacture and deal in electrical machinery.

The Delta-Star Electric Company of Chicago, Ill., has issued a booklet descriptive of the High Tension, Outdoor, Unit Type, Pole Top Switches. This is known as Bulletin No. 36, and gives detailed drawings of arrangement, prices and illustrations of important installations of this type of equipment.

T. W. Simpson, Pacific Coast representative of the Federal Electric Company, has returned to his San Francisco office from a four weeks' business visit in Chicago.

W. F. Brainerd, formerly field representative of the California Electrical Co-operative Campaign but now with the Valley Electric Supply Company at Fresno, is running true to form in constructive suggestions by putting into practice a Boy Scout sales campaign for his company in the selling of electrical appliances that is proving unusually remunerative and helpful in putting over the electrical idea. A full account of this campaign will be published in a later issue of the Journal of Electricity and Western Industry.

The Reiman Wholesale Electric Co. of Los Angeles expect to occupy their new building about October first. Work is progressing rapidly on the new addition, which is 25x105 feet in size, and three stories in height. This will give, in addition to their present quarters, a total of 17,000 sq. ft. of floor space.

H. H. Courtwright, of the Valley Electric Supply Company of Fresno, finds that by going direct to the lady of the house and showing her the advantages of the convenience outlet's being placed in the home and the side light attachments lowered from 6½ ft. to 5½ ft. enables the lady of the house with authority to tell the contractor how the house should be wired. It is a great idea and contractors and dealers may well pass this suggestion on to other places throughout the West.

Walter S. Edmands, of Boston, is manufacturer of a very compact and simply designed automatic ice cream freezer, which is electrically operated.

The Pacific States Electric Company has issued a new edition of their complete catalog known as Catalog No. 22. This is an illustrated book of approximately 1,000 pages. The book lists, describes and illustrates a complete line of electrical supplies and equipment.

Bauman & Loeb, Inc., of New York City have issued a new catalog of lighting fixtures. Bauman & Loeb are the originators of the "Savalot Idea" which consists of packing the complete assembled fixture in an individual package.

The Redwood Manufacturing Company of San Francisco has been awarded a contract for 39,600 ft. of 36-in. continuous stave pipe and 12,700 ft. of 30-in. continuous stave pipe for the Water Supply Department of the city of Norfolk, Va. The pipe is to connect Lake Prince to the city and will operate under a pressure varying from 70 to 250 ft. head of water.

The Electric Outlet Company of New York City announces the establishment of an interlicensing agreement providing for the manufacture of "Elexit" receptacles and plugs to the same master gauges. These devices will be manufactured and sold by the Arrow Electric Co.; Benjamin Electric Mfg. Co.; Bryant Electric Co.; Cutler-Hammer Mfg. Co.; Economy Fuse & Mfg. Co.; General Electric Co.; Hart & Hegeman Mfg. Co.; Harvey Hubbell, Inc.; H. T. Paiste Co.; Pass & Seymour, Inc., and the Weber Electric Co.



CAST ADRIFT ON A STORMY SEA

From right to left: Robinson Farmer, secretary of the southern district of the California Association of Electrical Contractors and Dealers, who recently put over the helpful convention of his association at Catalina Island. Next to him is Louis Gans, president of the southern district and on to the left is Clyde Chamblin, president of the California Association of Electrical Contractors and Dealers, who came down from San Francisco to help put over the Catalina meeting; while at the extreme left is H. L. Miller, prominent in association activities. They stand aboard the captain's bridge of the famous pirate ship "Ning Po," from which bridge the captain in former days has ordered many a piracy committed upon the high seas and the beheading of something like 150 prisoners in full view below from where the four stand upon the bridge.

John C. Merriam, president of the Carnegie Institution with headquarters at Washington, D. C., is a recent Pacific Coast visitor. It will be recalled that Dr. Merriam was for twenty-five years head of the Department of Paleontology at the University of California, and contributed some of the most wonderful scientific research in the unearthing of bones and fossil remains in the oil fields of Southern California. He is today considered as one of our foremost scientists. In a talk before



JOHN C. MERRIAM

the San Francisco Commonwealth Club Dr. Merriam paid a great tribute to electricity when he said: "Electricity today is unlimited in its possibilities. It forms the very foundation work in the advance of modern civilization." He used the great advances in electricity as an instance of what can be accomplished by painstaking, thorough and consistent research, as has been the case in this great modern development. Readers of the Journal of Electricity and Western Industry will recall that Dr. Merriam has long since appeared in its columns as a "Builder of the West," in appreciation of his splendid research attainments in forwarding scientific industrial effort in the West.

C. B. Hall left his business activities a few weeks ago, and taking his family with him, ran away to Carmel-by-the-Sea. September first will again find him stimulating Los Angeles business for the Illinois Electric Company and cooperating as usual.

"Uncle Ed" Cutting is again on the Coast. For years his friends knew him as the San Francisco manager for the Edison Storage Battery Supply Company, and bade him a reluctant farewell when he took up the duties of Assistant to F. D. Fagin at Orange, New Jersey. He has resigned to enter business for himself in Los Angeles, joining Ralph Hamlin in the distribution of Franklin Motor Cars.

H. Birchard Taylor, vice-president of Wm. Cramp & Sons Ship & Engine Building Company with headquarters at Philadelphia, Pa., is a recent Pacific Coast visitor. Mr. Taylor is particularly interested in inspecting installations of large hydraulic turbines in the development of which his company is playing a constructive part.

Personals

G. H. Hicks has been appointed chief engineer of the Western Pacific Railroad Company. He came with the Northwestern Pacific Company in 1912 and was made principal assistant engineer in 1919.

W. M. Deming, president Electric Supply Company of Memphis, Tenn., and at one time president and general manager of the Technical Publishing Company of San Francisco, formerly publishers of the Journal of Electricity, is a San Francisco visitor.

W. L. Goodwin of the Society for Electrical Development, Inc., was the recipient of a loving cup presented by the Independent Associated Electrical Contractors and Dealers of New York, as a tribute to his work with the Society. The presentation took place at the first annual outing of the organization, which resulted from the recent merger of the Associated Electrical Contractors and the Independent Electrical Contractors and Dealers Association in which Mr. Goodwin had a constructive part.

Guy C. Barker, formerly an electrical engineer with the Pacific Gas & Electric Company, but for the last two years with a large sugar company in Cuba, is again back visiting friends in California and expects to locate in the San Francisco Bay region.

L. W. Fay, formerly advertising manager of the Century Electric Company of St. Louis, has resigned to come to the Pacific Coast. He was so favorably impressed with the opportunities which are presented to the man interested in the electrical field on the Coast, while here on a recent visit, that he now plans to locate in San Francisco or vicinity.

F. W. Moreland, formerly efficiency engineer with the Portland Railway Light & Power Company, at Portland, and recently with the Department of Railways and Canals of Canada as senior assistant engineer, on the Grand Trunk arbitration at Montreal, has returned to Portland where he expects to engage in consulting engineering work.

E. A. Phinney, president of the Rocky Mountain Division of the National Electric Light Association and T. O. Kennedy, chairman of the Program Committee are preparing an exceptionally fine program for the meeting of the association to be held at Glenwood Springs, Colo., Sept. 19-22.

Carl Whitmore, formerly division plant engineer of the Pacific Telephone & Telegraph Company at Portland, has been promoted to the position of division superintendent of plant, filling the vacancy made by the transfer of H. J. Tinkham to the same position in Seattle. Mr. Whitmore will be in charge of all plant construction, maintenance and operation in the state of Oregon.

C. C. Cottrell has resigned as state engineer of Nevada to become manager of the Good Roads Bureau of the California State Automobile Association.

Carl K. Chapin, formerly general manager of the Brady Utility Company which supplies Memphis, Tenn., with electric power, is now located at Pasadena, California, and has become southwestern representative of the Journal of Electricity and Western Industry. Mr. Chapin will devote his entire time to building up a more extended editorial service in the southern district of the state, with especial emphasis in giving publicity to the new engineering and industrial activities now under way in the great metropolis of the Southwest.

R. E. Cunningham, superintendent of distribution, of the Southern California Edison Company, and W. J. McCullough, chief of stores department of the same company recently made a tour of inspection through the Northwest visiting the various power companies in the section. They were particularly interested in the cedar pole situation and visited some of the important producing centers.

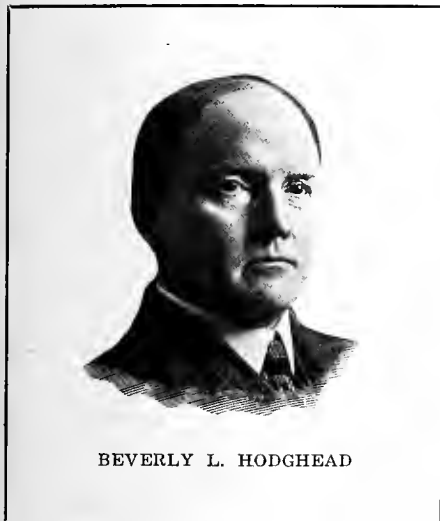
Charles H. Talmage has been appointed, effective Aug. 15, field secretary of the Rocky Mountain Electrical Cooperative League, succeeding E. T. Millham who is leaving the position to engage in other work. Mr. Talmage is exceptionally well qualified to fulfill the important duties of field secretary of the league, having been associated with the electrical industry for the past twenty years. His first connection was with the Western Electric Company in February 1901, and he has been with that company continuously since that time until about two months ago. He first traveled out of their Chicago office for about two years and then spent a year in their Chicago sales office. In February 1904 Mr. Talmage was transferred to the Kansas City branch of the Western Electric Company, and was later made sales manager of that branch. In February



CHARLES H. TALMAGE

1917 he was placed in charge of the Salt Lake City Office of the Western Electric Company. Mr. Talmage has been a member of the Advisory Committee of the Rocky Mountain Electrical Cooperative League since its organization, is an enthusiastic advocate of cooperation among the various branches of the industry, and the education of the public, through the functions of the league.

Beverly L. Hodghead, who recently accepted the presidency of John A. Roebling's Sons Company of California, has been actively identified with civic affairs in the San Francisco Bay district. He was one of the early presidents of the Commonwealth Club, an office he held for a number of years during which time the organization became an increasingly important factor in moulding public opinion for the betterment of the community and the state. He was formerly mayor of



BEVERLY L. HODGHEAD

Berkeley. At a period in the development of industry when industrial, community and governmental relations present problems requiring experience and breadth of vision in their solution, it is gratifying to record the appointment of a man with Mr. Hodghead's qualifications as the executive head of one of the leading industrial organizations of the West.

Laurence W. Davis, special representative of the National Association of Electrical Contractors and Dealers, has been obtained by the Denver Electrical Cooperative League to instruct the local dealers and contractors in the principles of the organization and to inspire in each the spirit of "selling on service."

A. G. McGregor, consulting metallurgical engineer with headquarters at Warren, Arizona, is now on a business trip to Anaconda, Montana. Mr. McGregor has been one of the leading engineers in Arizona in the designing and constructing of the large metallurgical plants that have been installed in that commonwealth during the past four or five years.

Lewis A. MacArthur, general manager Pacific Power & Light Company with headquarters at Portland, Oregon, has had conferred upon him by the University of Oregon the honorary degree of Master of Arts in Public Service. Mr. MacArthur has been a leading factor in the development of utility life in the state of Oregon, a state that has with one exception, the largest undeveloped water power resources of any state in the nation.

Stephen Birch, president of the Copper River and Northwestern railroad of Alaska, and a director of the Utah Copper Company, visited Salt Lake during the early part of August, on his way to the Northwest.

Frank R. Eldridge, Jr., Chief of the Far East Division of the Bureau of Foreign and Domestic Commerce, is to make an extensive field survey of the Asiatic market for American goods. The assignment of a chief of division to such a field survey in the geographical area of the world in the economics of which he specializes, is a new departure in the federal promotion of American foreign trade. Mr. Eldridge expects to sail from San Francisco about September 22, and will accompany the representative from the San Francisco Chamber of Commerce that is planning a tour of Eastern markets for the advancement of trans-Pacific commerce.

James H. Bonner, chief engineer of the Montana Railroad Commission with headquarters at Helena, Montana, has just returned from a two weeks' tour of the oil fields of Alberta, Canada. Mr. Bonner has been a forceful factor in helping to alleviate the unsatisfactory condition of the electrical industry in Montana where the smaller companies are all suffering from a decrease in business, due to the slump in mining activity and general business depression.

Phillip S. Biegler, associate editor of the *Electrical World*, has accepted an appointment as associate of electrical engineering at the State College, Pullman, Washington.

Louis S. Cates of Salt Lake City and **T. A. Rickard**, editor of the *Mining & Scientific Press* of San Francisco have been appointed among the nine new members of the American Engineering Council's Committee on Foreign Relations.

John B. Fisk of Spokane, Washington, has been appointed chairman of the Standing Committee on Sections for the American Institute of Electrical Engineers. **C. E. Magnusson** of Seattle has been appointed chairman of the Educational Section, Technical Committee. These appointments are for the administrative year commencing August 1, 1921.

Frederick C. Walters, proprietor of the Modern Electric Co., and **John C. Buckle**, formerly of the Buckle Electric Co., of Salt Lake City are enroute by automobile on a tour of California and are interested in seeing the latest and most up-to-date in the electrical display line throughout the state.

J. F. Callbreath, secretary of the American Mining congress, visited in Salt Lake City about the middle of August, and was the guest of the Utah chapter of the American Mining congress at a luncheon at the Alta Club, at which Governor Mabey and several prominent Utah mining operators were present.

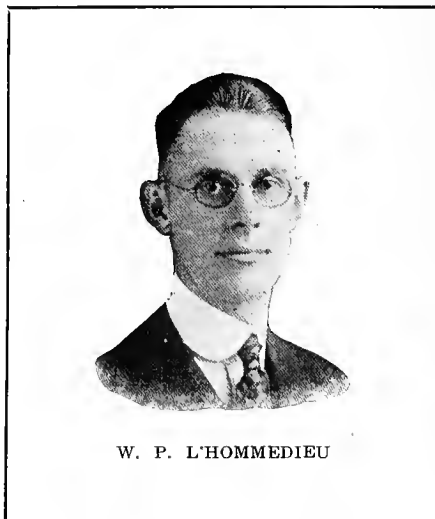
S. M. Ross, a member of the Railroad Commission of the State of Montana, is now visiting in Oakland, California. The utility situation in Montana generally is marking time awaiting the returns from this year's crops and the news as to when the Anaconda Copper Mining Company will reopen, as well as when a revival of the live stock industry might take place. These three factors are recognized as of outstanding importance in the great treasure state.

C. B. Jackson, superintendent of the Fresno Water Company, who was formerly associated with the Mt. Whitney Light and Power Company and later with the San Joaquin Light & Power Corporation, has recently been complimented by the *Cooperative Californian*, a paper published in Fresno, in which the substantial part Mr. Jackson has played in the upbuilding of utility life in and about the Fresno district has been highly commended.

H. J. Gille, commercial manager, Puget Sound Power & Light Company, and **J. I. Colwell**, district manager of the Western Electric Company at Seattle, have been made members of the Industrial Bureau of the Seattle Chamber of Commerce and Commercial Club, which is undertaking a very important survey of industrial and manufacturing possibilities in and about the Puget Sound region.

W. L. Reeves has been appointed city manager of Glendale. He is well fitted for the responsibilities; a Stanford graduate, with eight years' supervision of the electrical department of the City of Pasadena and two years as city commissioner.

W. P. L'Hommedieu, manager of the power department, San Francisco district, Westinghouse Electric & Mfg. Company, has been elected chairman of the San Francisco section of the American Institute of Electrical Engineers. Mr. L'Hommedieu has not only proven himself in past years an able builder in the power industry in central California in its commercial aspects, but he has been an untiring factor in the development of Institute and engineering matters. For three years he has been on the executive committee of the local section of the A. I. E. E., and he is now serving his third reappointment on the engineering committee of the Pacific Coast Division, N. E.



W. P. L'HOMMEDIEU

L. A. Last year as chairman of the meetings and papers committee of the local section of the Institute he provided meetings of timely interest and of profit for local members. As a consequence, this year's meetings of the San Francisco Section of the American Institute of Electrical Engineers are looked forward to in anticipation, and they will undoubtedly make for the local section a year of banner attainment, attendance and interest.

Construction News and Industrial Developments

Suggesting to the Engineer, Contractor, Manufacturer, Dealer, Agent and
All Business Men Opportunities for New Business

THE PACIFIC CENTRAL DISTRICT

SPOKANE, WASH.—The Barnes Electric Co., whose place of business is Spokane, has been incorporated by Floyd F. Barnes and William C. Allen, with a capital of \$350,000.

OLYMPIA, WASH.—Contract for the 8 lighting fixtures to be installed in the Temple of Justice, at a cost of \$27,000, has been awarded to the H. E. Gleason company of Seattle.

PORTLAND, ORE.—The Oregon Iron & Steel Co., who operate a small hydroelectric plant at Oswego, are replacing an old wooden dam with a concrete dam to cost \$50,000. It will be 400 feet long and 30 feet high.

YAKIMA, WASH.—The Pacific Power & Light Company has authorized Manager S. M. Henderson at Yakima to proceed with the construction of the proposed power line to the McKinley School corner, a distance of three miles.

REDMOND, ORE.—The Redmond Juniper Products Manufacturing Company is planning to establish its pencil slat factory here and has purchased the warehouse of the Central Oregon Irrigation Company which it will remodel and equip for the manufacture of slat.

SALEM, ORE.—It is reported that the Oregon Pulp & Paper Company, of Salem will construct a dam in North Mill creek that will develop 1000 hp. under a head of 36 feet. The power will be utilized in the company's paper mill at Salem. The estimated cost of the project is \$100,000.

PORTLAND, ORE.—It is reported that an automobile tire factory with a capacity of 500 tires daily will be built here. The organization will operate under the trade name of the Columbia Tire Corporation and is capitalized for \$3,000,000. Offices have been opened in the Northwestern Bank Building, Portland, Ore.

SEATTLE, WASH.—A contract for a \$350,000 store building in Seattle's new retail district, 5th and Pine Sts., was awarded by Henry Bittman, architect and engineer, Securities Bldg. to the Sound Construction Co., Lowman Bldg. This structure will be built for the Louisa B. Frye estate and will be occupied by Graubbaum Bros., furniture dealers.

ASHLAND, ORE.—The Oregon Gas & Electric Company has been purchased by the Anglo-California Trust Company of San Francisco, California. The sale includes land and equipment of the Gas Company in Ashland, Medford, Grants Pass, and Roseburg. No statement has been made regarding the future policies of the new owners.

SALEM, ORE.—Application has been made to the state engineer by W. L. Benham of Portland, for permission to appropriate 300 second feet of water from Clear, Lava, Fish and Lost lakes and McKenzie river, for the development of power for commercial purposes. It is estimated that 22,500 hp. can be generated under a head of 893 feet. No details of construction or cost are given except that a canal or pipe line five miles long will be used.

SEATTLE, WASH.—During the past two weeks the school board has awarded contracts for alterations and additions to three separate school buildings, each project approximating an

expenditure of from \$150,000 to \$200,000. Aside from these, contracts have been awarded for the erection of a million dollar high school in Cowan Park district, to be known as the Roosevelt High School. The general contract for this structure is held by the Rounds-Clist Co. of Seattle.

THE PACIFIC CENTRAL DISTRICT

FRESNO, CAL.—The city is planning to install a complete fire alarm system which it is estimated will cost \$125,000.

SANTA BARBARA, CAL.—The Santa Barbara Telephone Company will build a modern office building and exchange in this city.

OROVILLE, CAL.—Plans for doubling the capacity of the Palermo Plant near here have been approved by the California Packing Corporation of San Francisco.

PLACERVILLE, CAL.—The Eldorado Water Company announces that the board of directors has adopted the plan to build a storage reservoir on Webber Creek about five miles east of Placerville.

REEDLEY, CAL.—The Reedley Chamber of Commerce has subscribed \$12,500 towards a home building campaign to be put on in the various towns in the Valley by the Fresno Building Corporation.

OAKLAND, CAL.—President J. L. Becker, of the Fruitvale Business Men's Association has announced that a campaign for the installation of a new system of street lights on East 14th Street has been started.

SACRAMENTO, CAL.—Ten applications for water filings, among small users, with a combined expenditure of \$1,000,000, indicate much activity on small mining and irrigation projects, throughout the northern counties.

DIXON, CAL.—Buildings are now being erected on a 90 acre tract of land near here by the Pacific Gas & Electric Company. These buildings are to comprise the construction camp preliminary to building a large electric substation here.

RIO VISTA, CAL.—Sealed bids will be received by the trustees of Rio Vista for the purchase of two 50,000-gallon redwood water tanks and towers for the same. Bids will be received by F. J. Kalber, town clerk, until September 8th.

OAKLAND, CAL.—In order to further develop shipping facilities in Oakland, Commissioner Carter announces that a new municipal dock will be constructed near the present municipal docks at the foot of Clay St. Estimated cost, \$80,000.

FRESNO, CAL.—The formation of the Consolidated Irrigation District was successfully voted upon recently. The new district is part of the Pine Flat Reservoir project, which is intended to impound 600,000 acre feet of flood waters of the Kings River.

MELROSE, CAL.—The National Lead Company of California has completed plans and will commence construction of a new unit at its plant for lead refining operation. The headquarters of the company are at 485 California St., San Francisco.

OROVILLE, CAL.—J. M. Howells of Oroville, hydraulic engineer, is seeking to develop 11,000 acres of lands through diversion of 12,-

000 acre feet per annum, from Dry Creek, a branch of Butte Creek. Application was filed with the State Water Commission during July.

OAKDALE, CAL.—A ten mile diversion ditch is to supply 150,000 acre feet per annum, and 54,000 horsepower from the Stanislaus River in Tuolumne County, if the application of the Oakdale Irrigation District and South San Joaquin Irrigation Districts, are granted by the State Commission.

SACRAMENTO, CAL.—A resolution calling for the construction of a gap in the Sacramento River levee between Freepoint and Courtland was adopted by the state reclamation board. According to Melville Dozier, manager of the board, the estimated cost will be approximately \$145,000.

OROPILLE, CAL.—Feather River is again the subject of a petition for irrigation and power development. Guy Wilkinson, of Oroville, requests water for 5,000 acres of land, and 15,000 cubic feet per second, for hydroelectric power. The application is now before the State Water Commission.

OAKLAND, CAL.—Plans are being prepared for the first unit of a group of factory buildings for the Severin Motor Company of Kansas City. Architect M. I. Diggs is preparing plans and will take sub-bids as soon as plans are completed. The first unit will cost \$100,000 and the complete group will cost about \$400,000.

SUSANVILLE, CAL.—Contract for the construction work on the Eagle Lake Irrigation Project has been awarded to the Grant, Smith Company. The main feature of the construction work will be the tunnel tapping the lake and the siphon which will carry the water across Susan River to the Baxter Creek district. The tunnel will be 8,000 ft. in length.

OAKLAND, CAL.—The Severin Motor Car Company has announced the purchase of a plot of land at 54th Ave. and East 14th St., where it will build the proposed motor car plant.

MODESTO, CAL.—A building permit has been granted for a \$57,000, three-story brick building for the Pacific Telephone & Telegraph Co. Monson Bros. of San Francisco are contractors.

OAKLAND, CAL.—The municipal dredger is immediately to begin work filling in the Fourteenth Street extension to the bulkhead line. Plans are being made for the building of a complete municipal terminal wharf and ferry slip and additional street car tracks in connection with the port improvements. The work is being carried on by the city commissioners.

PLACERVILLE, CAL.—The Eldorado Water Company announces that the Board of Directors have adopted a plan to build a storage reservoir on Webber Creek about five miles east of Placerville. The dam will be 100 ft. in height with a crest of 400 ft. The estimated cost of the dam is approximately \$80,000, and the construction cost of the district is approximately \$125,000.

SACRAMENTO, CAL.—Headquarters of the Lincoln Studios, producers of comedies, has been transferred from Hollywood to the capital. Property belonging to the North Sacramento Film Company has been acquired. Favorable conditions of climate, scenery and many other elements entering into the successful production of motion pictures are responsible for the move.

THE PACIFIC SOUTHWEST

LOS ANGELES, CAL.—The board of public works is planning to install ornamental street lighting system on Larchmont Boulevard, between Temple St. and Rosewood Ave.

PASADENA, CAL.—The Kahler Sprinkler Company has been granted a permit to establish a brass foundry at 357 S. Fair Oaks Ave. The company has its main foundry in Los Angeles.

LOS ANGELES, CAL.—The Pruden Burr Steel Building Company has obtained an option on a tract of land at Venice and will erect a plant for the manufacture of steel buildings.

ROSWELL, NEW MEXICO.—The Roswell (New Mexico) Gas & Electric Co., was sold under foreclosure proceedings to Geo. W. York of Cleveland, Ohio, representing the bondholders committee.

GLENDORA, CAL.—The city is preparing an ordinance to submit to the voters Sept. 19, proposing the incurring of bonded debt in the sum of \$50,000 for the acquisition and construction of a waterworks system for the city.

LOS ANGELES, CAL.—Robinson Furniture Manufacturing Company has provided a 50 per cent increase in manufacturing space, for expansion in moderate priced furniture, to meet the increasing demand for its product.

PASADENA, CAL.—A million dollar bank is to be erected for the Union Trust and Savings Branch of the Los Angeles Trust and Savings Bank. The architecture is to be similar to the St. Francis Hotel, San Francisco.

PASADENA, CAL.—At a recent meeting of the Board of City Directors, a petition asking for the establishment of an ornamental street lighting system on South Grand Avenue between Colorado and California Streets was granted.

LOS ANGELES, CAL.—Contracts have been awarded for the building and steel work on the \$1,500,000 Fifth Street Department Store. This building will be built in three sections to permit store activities being continued during construction.

LOS ANGELES, CAL.—The Los Angeles Drug Company contemplates the erection of a warehouse and drug and chemical laboratories at 1135 San Julian St., building to be two-story, brick structure, 59 x 150 ft. Estimated cost, \$35,000.

LOS ANGELES, CAL.—The Public Service Commission has authorized Chief Engineer William Mulholland to continue work of increasing the height of the dam of the Upper San Fernando Reservoir at the lower end of the Los Angeles aqueduct.

RIVERSIDE, CAL.—The Cresmer Manufacturing Company has been awarded contract for the construction of a \$10,000 office building in warehouse for the Riverside Dairy Co., to be located at Twelfth & Vine Sts. Welmar Lamar is architect of the new building.

SAN BERNARDINO, CAL.—The Bear Valley Utility Co. has obtained permission from the Railroad Commission to acquire a franchise for the construction of a high voltage line and distributing system in Bear Valley, San Bernardino County, and to issue 40,000 of its common stock.

WILMINGTON, CAL.—The Winton Engineering Company of Cleveland, O., through their agent J. H. Kain of Los Angeles, announce that they are to erect a factory consisting of a molding shop, pattern shop, machine shop and assembly shop for the manufacture of Diesel engines.

PHOENIX, ARIZ.—In accordance with the decision of the board of governors of the Salt River Valley Water Users Association, it is expected to expend \$100,000 in the completion of a drainage system designed to take care of

the underground water problem. C. C. Cragin, chief engineer and general manager of the Association is in charge.

LOS ANGELES, CAL.—Hearing for rate increase by the Southern California Telephone Company is set for September 20th; it is claimed that adequate service can not be maintained, nor expansion provided for under existing rates. Rapidly growing out of tenth place in population, the present position of thirteenth in telephone rates is not sufficient. The rate asked for approximates second place.

LOS ANGELES, CAL.—An unprecedented growth in office buildings, is forcing the power companies to make large additions to substation equipment to care for elevator service. The new 10th Street and Grand Avenue substation of the Los Angeles Gas & Electric Company, is nearing completion. When all apparatus is installed, the company will have doubled their 115-230-volt direct current capacity. The Westinghouse Electric and Manufacturing Company recently received an order for a 750-kw. motor-generator set for this station. A new 1000-kw. motor-generator set for the 4th Street substation of the Southern California Edison Company, was ordered the middle of August, from the General Electric Company.

LOS ANGELES, CAL.—A new flood control project near Van Nuys, known as the Pacoima Canyon Dam was given its last needed support, when the Van Nuys Chamber of Commerce offered to contribute \$500,000 toward the expense and the County Board of Supervisors of Los Angeles County, agreed to use \$1,000,000 of the county funds, for the balance. The Pacoima Dam is to be 375 feet high, and will hold 12,000 acre feet. Water will be used principally for irrigation purposes, and thousands of acres of intensively farmed land will be protected from floods which would otherwise sweep down from the mountains. A small hydroelectric station may be built later to utilize the stored energy in connection with the irrigation supply.

THE INTERMOUNTAIN DISTRICT

AULT, COLO.—The city has recently voted, by a small majority, to sell the municipal plant to the Home Gas & Electric company of Greeley, Colorado.

IDAHO SPRINGS, COLO.—The Colorado Power Company has connected its line to the load of the Adriance mine. The mine is owned by Anderson & Brown of Denver, Colo.

BRIGHAM CITY, UTAH.—Work on the new municipal hydroelectric plant is progressing satisfactorily, and it is expected that the pipe line and power house will be completed early in September, and the plant placed in operation.

LOGAN, UTAH.—Application has been made to the Cache county commissioners for organization of a drainage district embracing 8400 acres in the vicinity of Hyde Park. A hearing on the petition will be held by the Cache county board on September 8.

CAMPION, COLO.—The city is to have light and power connections with the Western Light & Power Company's lines. A small plant has furnished lights for the academy at that place heretofore, but has not given the economical service that they will now have.

BOULDER, COLO.—The Boulder Valley Light & Power Company has recently been incorporated with a capital stock of \$10,000. Directors are Webster W. Benjamin, Cassius Cole and E. S. Bent. The company will carry on a general power business.

DENVER, COLO.—The Board of Capitol Managers will receive bids on electrical apparatus for the State Capitol Museum and the State Office Building up to 10:00 A. M., Thurs-

day, September 15, 1921. Specifications may be had from William N. Bowman Co., architects and engineers, 914 Central Savings Bank Bldg., Denver, Colo.

SALT LAKE CITY, UTAH.—W. P. Fuller & Company, Pacific Coast paint manufacturers, have purchased a warehouse site at the northwest corner of Third West and Fourth South streets, and plan to erect a warehouse to serve the distributing territory contiguous to Salt Lake. It is stated that the cost of the site and the warehouse to be erected will total about \$200,000.

BOUNTIFUL, UTAH.—Farmers of the Bonneville Irrigation district, at a special election held August 16, indicated their almost unanimous approval of the plan to bond the district for an additional \$125,000 with which to complete the construction of the Bonneville irrigation project plant. An original issue of \$600,000 authorized last year, was found, on account of various circumstances, to be insufficient to complete the project.

LOGAN, UTAH.—Half of the \$600,000 road bond issue voted by Cache county has been sold by the county commission to E. H. Rollins & Sons of Denver at 99.05. The bonds bear 5 per cent interest. It is expected that the work on the roads of the county will commence at an early date and be pushed to completion. Efforts are now being made by the commissioners to secure the state and federal aid for some of the roads in the county.

SALT LAKE CITY, UTAH.—An employment department has been established by the Salt Lake chapter of the American Association of Engineers, with headquarters on the sixth floor of the Deseret Bank building in the offices of McGonagle & Ullrich, consulting engineers. A committee consisting of C. J. Ullrich, chairman; P. W. Belcher, C. E. Painter, Joseph Blickenderfer, Frank Pickett and C. C. Jacobs has been named to work out the best plan to make the department a success.

EUREKA, UTAH.—An immense increase in mining development operations has been noted in the Tintic mining district. Some of the new work includes the cutting of a station on the 1600-ft. level of No. 2 shaft of the Chief Consolidated mine. This is one of the largest silver lead mines in the country, and is a large user of electric power. The Centennial-Eureka mine has just awarded a contract for the continuation of the long drift on the 1800-ft. level. Mining operations are also proceeding at the Bullion Beck, owned by the same interests. The work of shaft sinking at the Zuma mine is progressing rapidly, and this work will be continued until the shaft reaches the 1000 and 1200 levels. Practically all the mines in the Tintic district use electric power.

LOGAN, UTAH.—Organization of an enlarged water conservation district to take the place of the Petersboro-Mendon irrigation district in Cache county, recently declared by the supreme court of Utah to be virtually non-existent, through lack of proper formalities in connection with initial filings, is planned by the Cache county commissioners. They have filed with the state engineer a copy of the plat of the proposed Cache county water conservation district No. 1 and also a petition asking for a water allotment. The new district will extend three miles further south than did the district originally proposed, and will contain 7450 acres, or about 2000 acres more than the former district. It will be supplied, according to present plans, with water from Bear river by electric pumping. The supreme court found that the petition for the formation of the Petersboro-Mendon district was not fully signed, after the county commissioners had passed on the water allotment, and that therefore the commissioners were without authority to proceed further in its organization.



AN SA ON RANGES

The recent activity instituted by Western power companies in the merchandising of the electric range lends especial interest to this testimony from one who has evidently become a "satisfied customer." Apologies are offered to the original author:

DO U UU 1 2 ?

KT bought a little range,
4 she was very YY;
She cooks her meat each day with EE
And cakes and luscious ππ.
All the JJ did NV her
And often tried to TT,
But KT spurned their MT talk
And called them NMEE.
KT proclaims her range XLL,—
She's 1 2 UU her II,—
She says they're EZ 2 2 UU.
And KT never lies.

* * *

Many an electrical man has endeavored to explain to his office stenographer the fundamental principle underlying the use of the hyphen in such words as series-parallel or through-switches. But was the explanation as lucidly clear as that of the small boy who offered bird-cage as a sample of a compound word?

"That's right," said the teacher encouragingly. "Now, Tommy, tell me why we put a hyphen in 'bird-cage'?"
"It's for the bird to sit on," was the reply.

* * *

Most of us have been properly educated by the management and the telephone company that it saves time to state your name at once in answering a telephone call. Witness the following conversation:

Mr. Jones (taking down the receiver)—Jones speaking.
Lady—Oh, is this the Jones Electric Company?
Jones—Yes, madam.
Lady—Oh, may I speak with Mr. Jones?

Jones plays golf once in a while, and has on occasion hammered his finger with the hammer, but that has nothing to do with his reply.

* * *

THE COMPLAINT DEPARTMENT

An irate customer of undoubted Celtic origin approached the genial service-man in the Butte office of The Montana Power Company and with fire in his eye demanded:

"What's the matter with my meter?"

"Why, what seem to be wrong, Mr. ———?"

"What's wrong? What's wrong? Why, the damn thing creeps."

"Well, we certainly will investigate that. Just how does it act? How do you know it creeps?"

"How do I know? How do I know? Well, I'll tell you—the meter's in the clothes closet, and I had a hunch it was wrong, so the other night about 12 o'clock, I got up and turned on the light and watched it—an begorra, 'twas goin' 'round."

Our indefatigable engineers seem to be going to a great deal of unnecessary trouble. The whole thing is much easier than that, judging from a letter circulated some time ago. The following is an extract:

"We have a regenerative electric power plant whereby electricity is regenerated and stepped up from a small unit. As an illustration, we take a generator which requires one horse power to operate. From this generator we step the electrical current up through a series of coils and plates, from static, to any required horsepower that may be desired to obtain. In other words, we develop one, five, five hundred, or any amount of horsepower, at the cost of production of one horsepower. The electricity produced differs from that heretofore in use, however, in that it causes no heat, eliminating even danger in handling wires through which the current passes, being a departure from the heretofore known laws of electrical science, at the same time producing the same results—developing heat, light and power.

* * *

THE WRITER HAD A COLD

Received by an electrical dealer:

Mr. Jennings:
Please give bearer 1½ Watt lamb,
and oblige,
F. H. _____

* * *

ELECTRICAL HYBRIDS



X—The Electric Wir-ishman

The Wir-ishman's face is a network of lines,
Not of worry—of power, of course;
Influential connections with strength he combines,
They say he controls the force.

He is armored for action—and though it is known
By the Poles he is kept in suspense,
He is always the power behind the throne
And he's up in the current events.

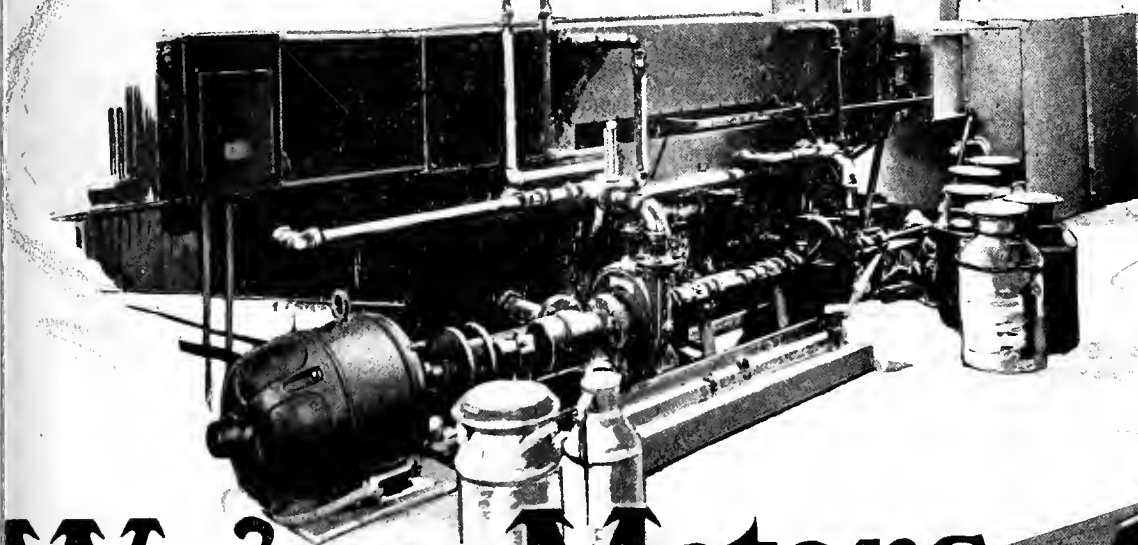
He's strong and he's pliant—he runs everywhere
Though his weight sometimes mounts into tons.
On many occasions he's up in the air,
But whatever he touches, he runs.

Journal of Electricity and Western Industry

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San Francisco



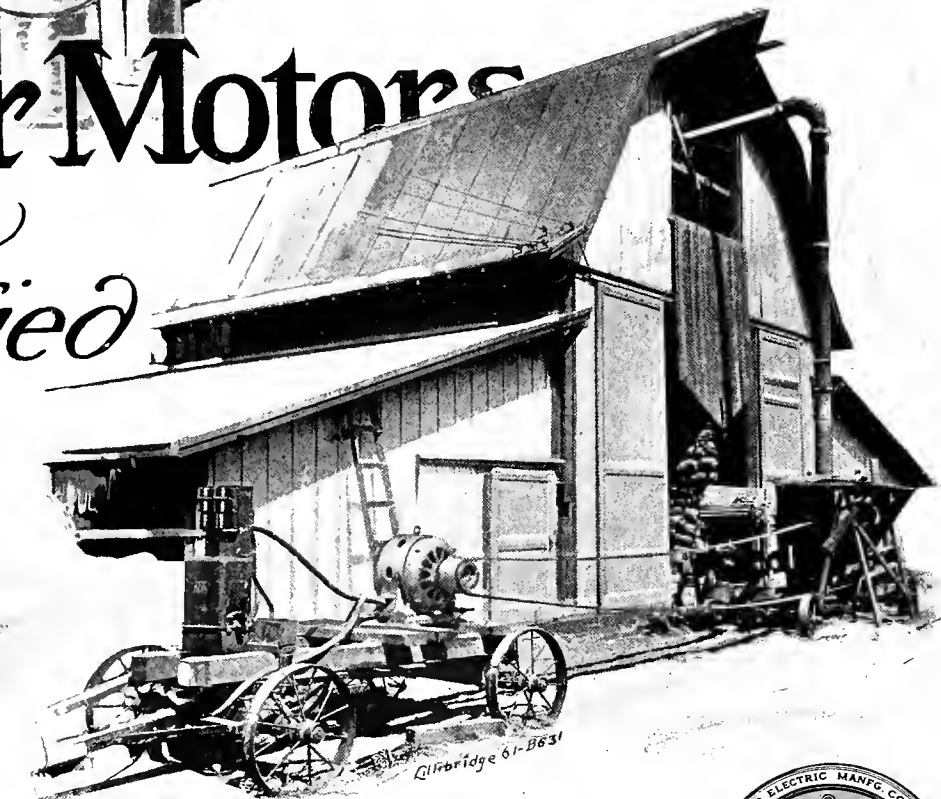
Wagner Motors *on the Electrified Farm*

Wagner Motors in such service aptly amplify the basic truth of our quarter century old story — Wagner, Quality. Wagner is quality.)

Sturdy construction designed to withstand "unusual" operation at the hands of non-electrical farm employees.

Witness the successful use of Wagner motors on this one California Dairy farm for driving cutters, separators, crushers, pumps, and all other motor-driven machinery.

Such records but emphasize that Wagner, Quality is not a slogan, but a foundation for faithful service.





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as the
Tower of Jewels

"DETROIT"
RUBBER COVERED
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It is significant that this most imposing feature of the Panama-Pacific International Exposition was wired *exclusively* with "Detroit" Wire.



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Journal of Electricity and Western Industry

A McGraw-Hill Publication

ROBERT SIBLEY, Editor

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Journal of Electricity and Western Industry

A semi-monthly chronicle of western events, advocating the economy, efficiency and convenience of electric power for all industries of the West—manufacturing, agricultural, mining, merchandising, home building and home making. Interpreting the value of electrical development to the business and financial man, the industrial man, the power man, wholesaler and retailer, contractor and constructor, engineer and home owner.

Because of the abundance of water power in the West susceptible of economical development, a dependable, uninterrupted supply of cheaper electric power is assured for these industries. The basic industry of the West—hydro-electric power generation—for which Journal of Electricity and Western Industry is the spokesman, is therefore logically and inseparably linked to the growth and prosperity of all phases of our daily life and business.

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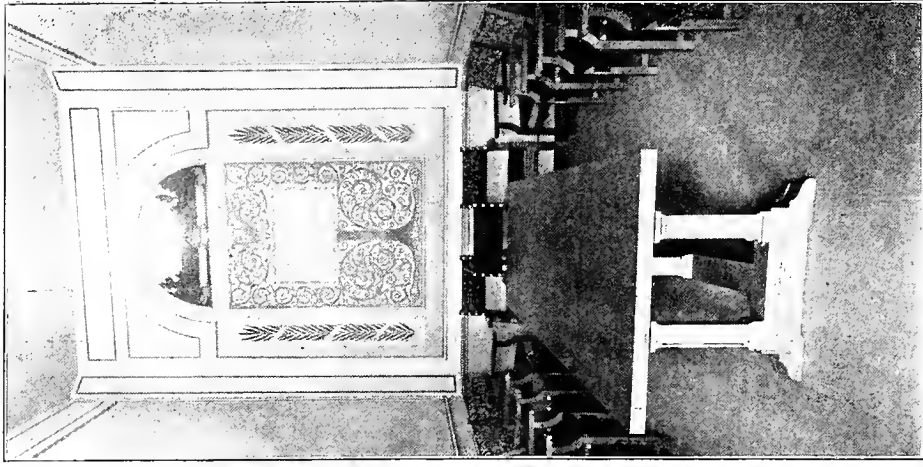
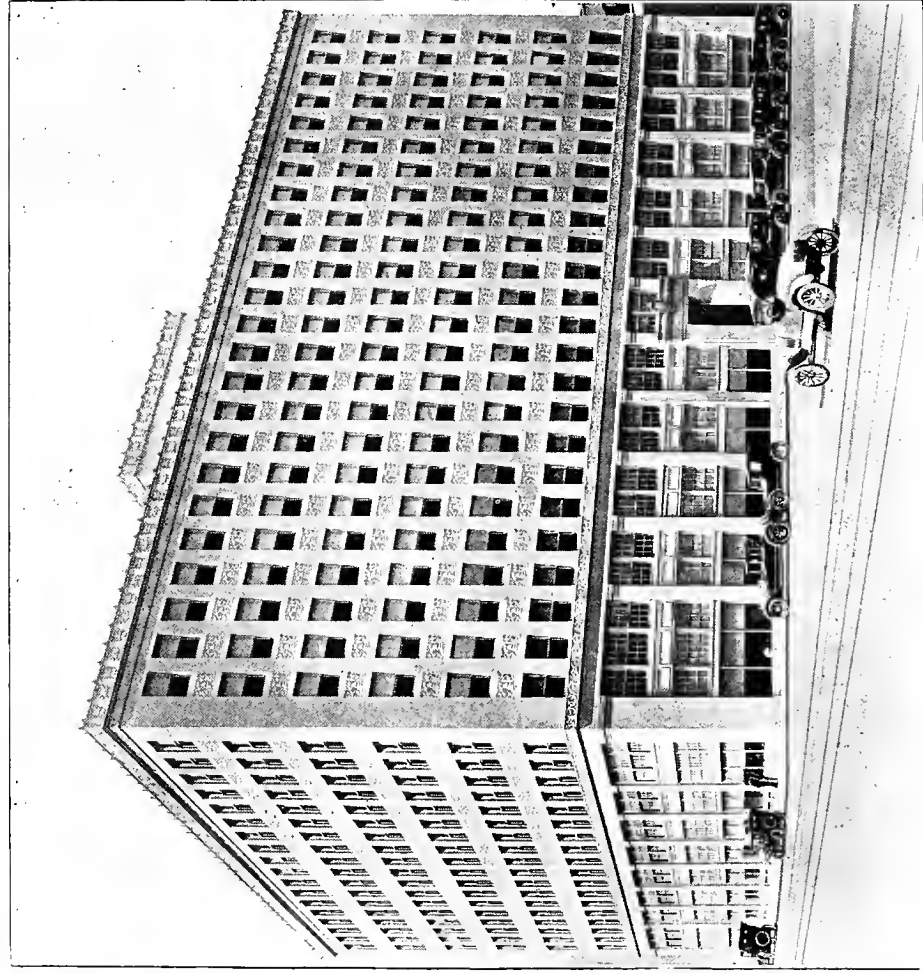
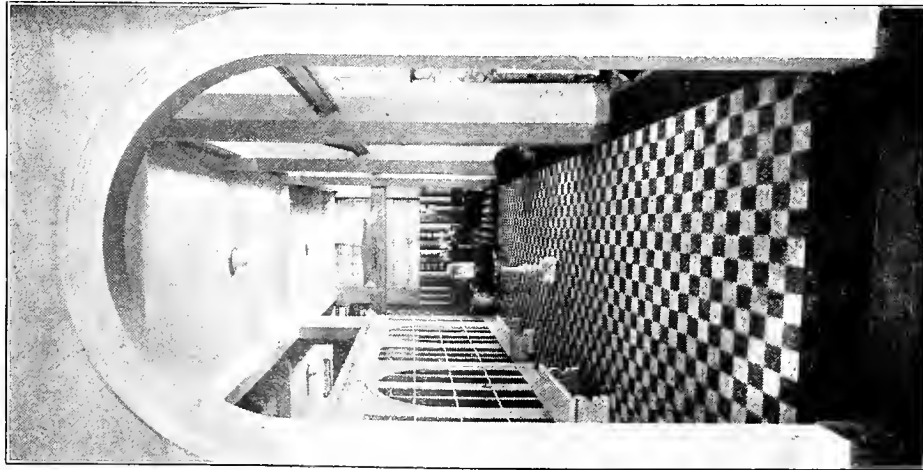
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WHERE COOPERATIVE MERCHANDISING IS MATERIALIZED

One of the most effective examples of cooperative merchandising readily be judged by the wholesale buyer. It is worth mentioning that the handsome displays of western manufacturers show up very well in this comparison. Only accredited visitors are allowed, but for them this permanent exposition has carried the convenience of the department store idea into the furniture industry. This is a new step in cooperative merchandising and for every household need from all parts of the world are here one in which the furniture men have led the way for other shown side by side, so that comparative quality and price can western industries to follow.

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ROBERT SIBLEY, EDITOR
Clotilde Grunsky — Associate Editor

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The Province of the National Organization

IT WILL undoubtedly come as a shock to electrical contractor-dealers east of the Rockies when they learn that the Pacific Coast states are preparing to secede from the national body. This action has already been taken by Oregon and California and it is fully anticipated that similar action will be taken by Washington in the near future.

While unquestionably distance and the expense involved in keeping in contact with the national headquarters in New York, three thousand miles away, have something to do with this move, those who have followed closely the trend of events in the East and West see a far greater principle at issue. The East believes in nationalization with strongly entrenched national direction superimposed upon local districts. The West, on the other hand, believes in self determination of the district, with the national organization functioning rather as a clearing house of ideas and general policy control.

It would seem that the self determination principles of the West are well justified by the good that has been accomplished through local activity along merchandising lines in this region. California, Oregon, Washington, Idaho, Montana, Utah and other state associations are holding well organized meetings in their districts with attendance thoroughly representative of every section in their respective states. The recent national gathering on the other hand, was far from representative. New York and Pennsylvania had seventy-eight and twenty three delegates respectively, far more than any other state, while from the great district west of the Mississippi River, Kansas and British Columbia alone were represented with one delegate each.

"By their fruits ye shall know them." It is not the purpose of this editorial to indict the national association for its lack of accomplishment, but since L. W. Davis, secretary of the national association in a recent issue of the "Electrical Contractor-Dealer" has severely criticized the Pacific Coast and intimated that in his opinion the Pacific Coast is behind the

nation as a whole in the development of the contractor-dealer movement, the Journal of Electricity and Western Industry, as the exponent of the industrial and electrical West, feels that it is its place to come forward to champion the truth in regard to the West.

It is difficult for us to see how a man of Mr. Davis' attainments in sizing up situations and achievements, could so overlook the wonderful outstanding accomplishments of this district West of the Rocky Mountains, or upon what basis he could intimate that the contractor-dealer ideals of this region were such as to stimulate inefficiency, tending to divert trade into artificial channels of distribution. We challenge Mr. Davis to show where in all his association he can find more constructive accomplishment than has been brought about in the West during the past four years, an accomplishment in which the contractor-dealer has played the central part.

We mention a few only of these outstanding achievements: The inception of the cooperative campaign idea, the carrying out of the electrical page idea on a scale and with results not obtained anywhere else, the institution of better merchandising principles in every district through visits of trained field men, the wide spread installation of cost accounting systems and their study and analysis along more comprehensive lines than is common elsewhere, the conception of the "convenience outlet drive" and the much copied Electrical Home idea, the cooperative selling of utility securities among all branches of the industry as a whole in this region which means much for the continued prosperity and growth of the West.

The West sees in the national organization of electrical interests a move which must be stimulated and supported. But this can only be accomplished through the bottom units working and organizing upward into larger central units and not by the large central units, without contact or knowledge of local situations endeavoring to supervise or blanket the nation as a whole.

A Western Trade Mark For Quality Service

PERHAPS in no other section of the country has the quality-service trademark idea been worked out to the extent that it has West of the Rocky Mountains. "Sunkist Oranges," "Sun Maid Raisins," "Hood River" apples all represent the output of combined industries who have advertised their trademarks to guarantee quality product, properly packed. At the same time the dollar and cent return to the individuals involved in these great present

day cooperative movements has shown that such a policy is good business from the standpoint of cash returns.

Why does not the electrical industry of the West follow this example in adopting a trademark of quality service which will give publicity value to the ideals it is endeavoring to put into practice through cooperative campaigns and other groups? It is true that "Pacific Service," "Edison Service," "Puget Sound Power" have won their way in the hearts and affections of local districts. But the de-

mands of the hour are for broader and more comprehensive units. Let the electrical industry as a whole adopt a trademark for quality service in the West. Let deserving manufacturers, jobbers, central stations and contractor-dealers be entitled to use this trademark when willing to live up to its ideals. Let it become a byword in every western home. Let the full importance of a two billion dollar industry in the West be realized. Let men of our own industry appreciate its strength.

All manufacturers, jobbers, central stations and contractor dealers doing business in the West should be given an equal opportunity to attain the privilege of using this trademark—and all or any of them should be disciplined when ideals of the industry are not upheld in the practical working out of daily affairs by the withdrawal of this privilege.

The entire electrical industry is on trial. As Benjamin Franklin said in the good old days, "We'll either hang together or we'll hang separately." And good service is the only medium of exchange by which the trademark that is worth while can be acquired.

Not For the Industry But With the Industry

THE ADVENT of the paid secretary or manager in an organization for the betterment of industry is always a dangerous thing. Too often leaders of the movement begin at once to rest from their labors, leaving the thinking and planning in behalf of the movement to the man who is paid to do it.

It is necessary to have paid operators and executives if a movement is to grow beyond the point of merely casual helpfulness—but beware at this critical juncture lest the supporters of the movement become indifferent. It is only by the combined thought and action of an industry as a whole that great accomplishments can be brought about. The wise executive manager will realize the absolute necessity of sensing what public opinion within the industry is ready for and then, by constructive analysis of the possibilities and a campaign of well directed publicity, of arousing the enthusiasm of every member and branch of the industry to bear a share of the load in accomplishing the end desired. In a word what is needed on the one hand, is a continuing sense of responsibility on the part of individual members and on the other, the development of true leaders who have the gift which enables them to put a great industry to work.

Increasing Need for the Servicing of Electrical Equipment

A BIG field of opportunity is being overlooked by the electrical industry in the servicing of electrical equipment both in industrial plants and in homes. In industry the insurance companies are making broad and rapid encroachments, performing this service to the exclusion of the natural channel through which this work should be accomplished, namely, the contractor-dealer in the local community.

The industry must wake up to this situation or a very profitable and proper field of remuneration will be taken entirely out of its control. On the other hand, the servicing of electrical equipment in the home is each day becoming more necessary in the West, as household users of electricity are increasing in this section of the country at a very rapid rate. One of the prominent manufacturers of household appliances has introduced service stations in certain cities of the West. These operate at high efficiency, yet the surface is as yet only scratched by such institutions. Some broad activity must be inaugurated to meet this situation. Householders do not know how to make the most elementary wiring connection, how to repair an electric iron when it gets out of order, nor indeed how to do the simplest work involving electrical application. Such service is vital if the good name of the electrical industry is to be forwarded. So important are these two things to the industry itself, namely the servicing of industrial equipment and the servicing of electrical appliances in the home, that spasmodic development should no longer be countenanced. It must receive the whole-hearted concerted backing of all four branches of the electrical industry.

Common Sense View Point on San Francisco Bridge Project

SOMEONE has said that the one outstanding thing about common sense is that it is not common. So far as the San Francisco bridge situation is concerned, however, sensible thinking is gradually coming to the fore.

Since the two noted engineers from the East, Messrs. Modjeski and Davies, made their report last month, it is becoming better understood that from forty to fifty million dollars will be necessary to swing any project for bridging the bay at the present time. The public is coming to the conclusion that the sane thing to do is to have all transportation facilities from the East Bay region terminate on Goat Island. Undoubtedly governmental permission could be secured for this move and a terminal center created which would have many advantages. Under such a situation, the time consumed aboard the ferry would be halved and a unified transportation situation brought about which would make for a greater California as nothing else could.

It is not improbable that within a few years the science of tunneling or bridging will have advanced to such a point that the step could be taken to bring San Francisco in permanent connection with the mainland without the use of ferries. With the heavy freight and passenger traffic thus disposed of, automobile traffic could eventually be cared for over somewhat the same routing proposed by Messrs. Modjeski and Davies without the expenditure of such vast sums of money. Competent engineers estimate fourteen to sixteen million dollars amply sufficient for such a modification.

Bridging San Francisco Bay is a task so replete with possibilities for ultimate good in the development of the West that it may well call for the best

thought and genius of the nation. We must, however, be content with common sense moves which, even though they do not at once attain the desired end, give a practical improvement in a situation that is daily hampering the growth of this section.

Industry and the Police Station

CONSIDERABLE thought may well be given to the words of Daniel O'Brien, Chief of Police of San Francisco, who recently addressed the San Francisco Electrical Development League. Industry generally, and the electrical industry in particular, is much concerned with the well being of property, and Chief O'Brien pointed out a number of ways in which theft of property may be lessened. Lock the office door, and see that reasonable attention is given to the closing of drawers before going home in the evening. Noting suspicious characters and sending word to the police station, will often mean great savings for the community and for industry. Particularly notable is the problem of automobiles in cases where one parks at the side of the street, expecting to be out again in two or three minutes, and the thief passing by takes advantage of just such situations to get away with the car.

May we not all of us be putting too many temptations in the way of our brothers by our carelessness? Cities of the West are becoming noted for a decrease in the number of robberies reported, and it is only by cooperation on the part of the public generally that this improvement can go on.

Mention it by Name and Point to it by Arrow

THE EVER increasing use of the electrical convenience outlet in the new homes of the West bears striking testimony to the good that is being accomplished by the development of the Home Electrical idea, the education of the architect and the home builder as to the use of what was formerly known as "the base receptacle," and the combined effect of powerful advertising on the part of manufacturers in the trade press and popular magazines.

There is more, however, that can and should be done. The antiquated and unsafe screw base receptacle should go. The California Industrial Accident Commission will soon issue orders that will make the use of the screw base unlawful in all installations under its jurisdiction. Other bodies throughout the West should take similar action. This drive should be followed by a wide spread dissemination of illustrations of the concealed type of outlet. Manufacturers can help immeasurably in this move by sending out this type of product with the name "electrical convenience outlet" clearly printed on the box in which it is enclosed for distribution to the trade. This will further educate the trade and accustom them to the general use of this term and will carry the message to all those engaged in building work. Advertising of electric appliances should also not only show the electrical convenience outlet in the picture, but its name should be mentioned and it

should have an arrow pointing to its location in the illustration. Such a move would in no way detract from the advertisement of the appliance. Every electrical convenience outlet properly installed in the home means satisfied customers and the future sale of appliances.

An Instance of How Good Will is Developed

DURING the recent journey to the North of a number of men of the electrical industry for the purpose of attending the Mt. Rainier electrical jobbers' convention, it developed that the train from California would arrive at Tacoma about four A. M., the connecting train leaving for Mt. Rainier National Park about nine o'clock.

The editor of this journal conceived the idea of telegraphing ahead to the Pullman ticket office at Portland, calling attention to the opportunity of putting over a real service by having a special Pullman car await the arrival of the party at Portland so that the California contingent could be side tracked at Tacoma without being inconvenienced at such an early hour. Since it was Sunday evening and only three hours' notice could be given, it was with no little sense of appreciation that the California party found upon arrival in Portland not only a special car awaiting them but also Burton Beck, the local passenger agent of the Union Pacific System, who had come down personally to see that everything was satisfactory.

Ever since the railroad administration sometime back taught the public not to expect accommodations and courtesies, travellers have wondered if the service of former days would ever again prevail. Needless to say this little courtesy at Portland will not soon be forgotten. Mr. Beck but typifies what railroad service in the West, freed from governmental hindrance, is again winning for itself—a lasting good will in the hearts of the travelling public.

The Alleged Burden of Cooperative Campaign Contributions

CERTAIN manufacturers and jobbers are inclined to complain over the number of cooperative campaigns formed in behalf of better merchandising that are springing up all over the nation, due to the fact that contributions might become burdensome.

The complaint comes with a measure of surprise. To us, the whole question of whether there is any burden involved, may be stated as a question of whether or not the cooperative movement is founded on the forwarding of the fundamental principles of better merchandising. If they are, then the more of the organizations in existence, the better for every manufacturer taking part in this great work. There is nothing that will net bigger returns in dividends than the giving of time and personal effort toward the forwarding of really constructive movements aimed to promote cooperative effort in better merchandising. There is no question of charity involved.

Western Comment on Current Events

Editorial Notes and Readers' Views on the Outstanding Aspects of Financing, Trade Promotion, Legislative and Associated Topics that have a Special Bearing on Western Business

Western Lumber Mills Remodel Plants

Lumber Industry Meeting World Trade Depression
by Economies of Operation Made Possible by
More Extensive Electrical Equipment

Reports from the Northern California and Northwestern timber districts indicate general activity in the remodelling of plants, looking toward more economical operation and the recapturing of world markets on the basis of present low returns and high freight rates. One lumber firm in California has installed electric logging equipment, the first of its kind in the state and the second in the United States, the first having been in use for the past two years by the Snoqualmie Falls Lumber Company near Seattle. The Pacific Lumber Mills, at Scotia have added materially to their electrical equipment, adopting the interesting feature of push button control in the operation of mill machinery. These are but two instances of a general resumption of a more active business.

Two logging companies of Washington which have been closed for over a year have recently resumed operations and are cutting cedar. The general opinion seems to be that mill prices for lumber will never go back to a pre-war level, but that operating economies on the part of western mills will enable them to take profitable advantage of a reviving market. It is significant that electrical operation is looked to to increase the quantity of output and lessen costs.

Two Frequency Unit for Los Angeles

Ultimate Standardization for Los Angeles District
Facilitated by Steam Turbine Installation
to Operate at 50 or 60 Cycles

As part of its \$1,000,000 program for 1921 betterments in the electrical department, the Los Angeles Gas & Electric Company has given the General Electric Company an order for a steam turbine rated at 17,500 kva. at 60 cycles, or 15,000 kva. at 50 cycles. Installation is to be completed by the fall of 1922. The double frequency feature will permit ultimate standardization in the vicinity of Los Angeles.

Uniform frequency may not be feasible for some time, but for operating companies to have the vision to make purchases as far as possible with such in mind, is commendable.

No fear of a power shortage for 1922 has been expressed, due to large developments recently placed

in commission, and others nearing completion, but the present rate of increase which may reasonably be expected to fall on the power companies' lines, does indicate a continuation of narrow margins for some time with here and there an actual shortage for a few months. Any solution of future problems in power shortage which takes advantage of availability on different systems, will still further stabilize the utilities in their chosen field of public service. The public good should be served whenever and wherever team work in industry can do so.

Super power zones are a reality in the hydro-electric systems of the West as they exist today because of their gigantic scale of development, at the same time physical differences between systems should be ironed out gradually to permit of inter-connection, in order that the state, or states, as the future may show, can unite in absorbing natural resources to the fullest advantage of all.

Western Utility Problems Outlined

California Railroad Commissioner Expresses Views
on Questions of Public Ownership, Taxation
and Utility Rate Fixing

The recent change in membership of the California Railroad Commission has created a wide spread interest in the attitude of the new commissioner, Chester H. Rowell, toward public utility problems. In a recent address before his associates, Mr. Rowell clearly states his position. He pointed out that regulation will survive only if it can continue to protect the public against extortion and exploitation and at the same time keep the utilities able to render their service and finance themselves to expand that service. Public ownership was given as the alternative of regulation.

"Until we can transform our governments so as to make them fit for public ownership," he stated, "this public regulation must survive. And personally I hope it will survive as to as many utilities as possible, as long as possible after that." The question of public ownership, he declared, would be determined by impersonal economic forces. "And the most startling thing about it," he added, "is the certainty that public ownership of at least a lot of things is going to be thrust on us before we shall be ready to handle it."

In regard to problems of rate fixing, Mr. Rowell took the stand that "fair return" should be figured on a property and not on an investment basis. He argued that the contention of many utilities that

financial needs should be made the basis for returns would lead to sustaining private financing even after the cost of that financing had become so great that the proper remedy should be not still higher rates, but public financing.

Stating his approval of the King tax bill, which materially increased the tax rate of all California corporations, Mr. Rowell went on to say:

Taxes, of course, must be allowed, as everybody but the politician knows. The law requires it, and conditions would compel it even if the law did not. For instance, we had a case only the other day in which a certain city had assessed a gross revenue tax on the gas company which supplied it and neighboring cities. We made the gas rates in that city higher by the exact amount of the tax, so that whatever the city took from the company in taxes, its people paid back in rates. This is not to say that the tax was improper—personally it was good policy in this instance—but our decision made clear what it is the chief purpose of many politicians to conceal, that the people do pay the taxes, whether they are levied directly or indirectly. This is a law, not of the statute books, but of economics and no legislature can repeal it. Any hocus-pocus to lift the tax payer over the fence by his own boot straps, is a mere invention to fool the people.

Stockton Ordinance Forbids Meters

City Council Would Perpetuate Flat Rate by Local Law Forbidding Installation of Meters on Private Premises as Health Measure

An amusing situation has arisen in Stockton, California over the refusal of the city council to permit the charging of meter rates for water. This takes the form of a revision of a former ordinance permitting meters and regulating rates which was passed in 1913, prior to the formation of the California Railroad Commission and may be looked upon as an attempt to usurp the present powers of that body. A test case has already been brought to determine the legality of the measure.

The action of the city was intended to perpetuate the system of flat rate charges by declaring it a misdemeanor to install a meter on a private residence. The reasons given were that water as an essential to health should not be in any way limited in use, and also that, as the installation of meters might lessen the pressure on the private premises, the fire hazard would be increased and the city welfare endangered. The measure therefore ranks as a health ordinance and a fire protection act.

The significance of the situation from the standpoint of the legal precedent established is of less importance than its indication of a dangerous tendency toward the usurping of utility regulation by local government.

Colorado Urges Lower Freight Rates

Complaint Filed with Interstate Commerce Board Urging Rescinding of Increase. Other Western States Asked to Join

The importance of the rate problem to western industry is reflected in the complaint recently filed with the Interstate Commerce Commission by the transportation committee appointed by Governor O. H. Shoup of Colorado to investigate the rate sit-

uation. The commission is asked to rescind its order of August 26, 1920, which granted the railroads an increase in fares, and in the case of rate increases requested in the future, to require the railroads to show that they are "efficiently managed."

The governors of sixteen western states have been asked to join in the petition. In making this appeal, the Governor of Colorado says:

"Transportation charges are so vital a factor in the commerce of the country, that it does not seem possible for a full resumption of normal business to occur unless every important industry is enabled to distribute and market upon transportation charges which the traffic can pay and still show a profit. Our position is that reduced rates will produce increased traffic and should consequently produce increased revenues."

Washington Miners Accept Wage Scale

Work Under Way in Large Electrified Coal Mines of Washington with Labor Independent of the United Mine Workers of America

Another step forward in the solution of western labor problems has been taken in the Northwest. Commercial coal mines of Washington, which have been closed since last March when the miners refused to accept a reduction in wages were reopened August 22, with labor independent of the United Mine Workers of America. Coal is now being shipped from several of the mines and work is under way in most of the large producing mines.

The wage scale in use is that proposed by the neutral member of the arbitration board selected to settle the dispute, which has been pending since September, 1920 at which time an increased wage scale was proposed by eastern coal miners. This was accepted by Washington mine operators upon threat of a strike, but only under protest and without contract with the unions. The investigations of the state coal commission showed that from October 1920 to the end of February 1921 there had been an average loss to the operators of 26 cents on each ton of coal produced.

The wage scale proposed by the arbitration board allows earnings from \$7 to \$14 per 8 hour day for coal diggers, \$6 per day for scale men both above and underground and \$4.50 per day for common labor. It was at once accepted by the operators, while the local and national officials of the miners' union refused to permit the men even to vote on its acceptance. It was this act which precipitated the breaking of all relations between the Washington Coal Producers' Association and the United Mine Workers of America. It has now been announced that a plan of organization embodying the principle of collective bargaining will be worked out between the operators and the men in which they will be given a voice in the discussion of their mutual problems. A ready response has met the call for men to work under these principles and active operations have been resumed on a normal scale.

The solution of this problem along reasonable lines of arbitration and free relations between the employe and employer would seem to have laid a stable foundation for future growth.

Letters to the Editor

Federal Amendment on Tax Free Securities Should Not Be Retroactive

To the Editor—

Sir: I am interested in your editorial of July fifteen entitled "Urge the Lessening of Non-Taxable Securities." I believe the constitution of the United States must be amended in order to subject to federal taxation income derived from tax-free securities. In fairness to the present holders of tax-free securities, I think such constitutional amendment should not affect the income derived from any such securities issued prior to the effective date of the amendment. Amendments to the constitution of the United States must be adopted by the legislatures of two-thirds of the states in the Union and the best way of submitting such constitutional amendment is by act of congress. I understood that Senator Smoot has recently introduced in the Senate of the United States a measure calling for the submission of such a constitutional amendment. I do not have a copy of this bill but will obtain one.

The most effective way of securing the initial action of congress is to interest the senators and representatives now there, and this can be done by urging all members of our industry to present the question to their representatives in congress.

If such an amendment were proposed so as to affect tax-free securities heretofore issued, it would undoubtedly arouse widespread opposition, but if it were applied to the obligations of states, counties and cities, irrigation districts, etc., hereafter issued, I think it could be adopted without any great difficulty.

FRANKLIN T. GRIFFITH,
President.

Portland Railway, Light & Power Company, Portland.

Where are the Salesmen with Retail Experience to Come From?

To the Editor—

Sir: I have read with much interest B. E. Rowley's letter to you on "Choosing the Salesman with Retail Experience," which appeared in the August 15th issue of the Journal, and must admit that to a certain extent Mr. Rowley's argument is sound.

The hardware jobbers and dealers enjoy an old established business, which has developed through many generations, so that the wholesale hardware merchant has a very large range of dealers' employes to choose from, who have had the advantage of a retail experience.

I judge it would take at least three to four years' training to obtain a fundamental retail education. Now it is well known that the electrical jobber has only existed for barely twenty years, not even for one generation, and that a few men about twenty-five years ago were pioneers in this field,—they generally were a combination of electrical contractor and dealer—and it was necessary that they first educate themselves.

The lines which electrical jobbers carry, such as telephones, motors, watt meters, transformers, lighting units and hundreds of wiring devices, are of a technical character and make necessary knowledge and application of Ohms law, electrical formulas and technical data, and because the electrical jobbers dealt primarily with engineers of power com-

panies, railroads, industrial concerns and contractors, it was found that they had to develop what may be termed "sales engineers," which called for men with somewhat different qualifications than possessed by clerks in retail stores, even if electrical retail stores had existed at that time.

It has therefore taken years for distributors of electrical goods to educate their salesmen, and this at a considerable expense. I have known personally several men who started as employes of electrical contractors who have made a success in the jobbing business, but they were the exception and not the rule.

I presume that Mr. Rowley will claim that he was referring to the sale of wiring devices, such as sockets, lighting switches and some few standardized appliances. If so, he must realize that the electrical dealer, because of the newness of the business, is going through a period of evolution similar to the jobbers ten or fifteen years ago, and as yet has not had time to train retail clerks sufficiently to take care of his own needs. When this is accomplished, and provided it does not tend to disrupt the dealer's established business, you can rest assured that the electrical jobbers, whose sales organizations are now being readjusted and reorganized to take care of the growing and large appliance sales, will be only too glad to avail themselves of the opportunity of obtaining experienced electrical retail salesmen to make their sales organizations more complete.

W. S. BERRY,
Sales Manager.

Western Electric Company, San Francisco.

Plan to Promote a More Wide Spread Use of the Standard Accounting System

To the Editor—

Sir: The remarkably favorable effect that quicker turnover of accounts receivable has on net profit is not generally appreciated by Manufacturers, Jobbers, Dealers or Contractors. For instance: if gross profit is 33%, overhead 30%, merchandise turnover 90 days and accounts receivable turnover 90 days then the net profit will be about 6%. If the accounts receivable turnover is cut down to 30 days by efficient credit management and quick collections, the net profit will be about 9% or approximately 50% increase in the amount of the net profit.

We all know that there are entirely too many business concerns that are not making a sufficient net profit to enable them to pay their bills promptly. Possibly in the large majority of such cases this condition could be corrected if these concerns knew, by means of efficient accounting, exactly why they were not making a sufficient net return on their investment.

Realizing the deplorable lack of proper accounting by electrical contractors with its train of reckless competition, underbidding, inefficiency, "slow-pays," and bankrupts, it became apparent that a uniform system of cost accounting would of necessity have to be planned and devised to correct this serious condition and to promote the best interests and progress of the electrical industry.

After great labor, numerous conferences and at heavy expense, a complete but simple system of accounting was evolved and placed on sale by the National Association of Electrical Contractors and Dealers, 15 West 37th St., New York, N. Y.

Various plans and considerable publicity have however, so far, failed to bring about a reasonable sale of this Standard Accounting System and naturally this has been a keen disappointment and discouraging to those who labored so long and unselfishly in perfecting the system.

This writer does not wish to comment upon or criticize the previous plans or publicity to promote the adoption of the Standard Accounting System but rather to applaud any and all previous efforts by those that have this subject at heart. No particular plan will bring complete success and all should strive in their own way by personal work and suggestions to help the good work along.

My plan provides for a campaign of publicity to be carried on by those who are in touch directly and most frequently with the concerns or individuals that are "slow-pay" and who apparently have serious need for the Standard Accounting System, namely: the Credit Managers of the electrical industry that are responsible for the extension of credit to "slow-pay" customers and the final collections or losses on such "slow-pay" customers.

And who, other than the Credit Managers, can approach the "slow-pay" customer on this subject in such a forceful and unique way? The recommendation of the Credit Manager in such instances amounts almost to a command and when the recommendation comes from the Credit Manager of all the creditors, it will have a cumulative and powerful effect on the making of a quick decision by the debtor, because he knows that being obstinate or recalcitrant may endanger his credit standing. And Credit Managers are fully justified in withdrawing credit courtesies to debtors that refuse to adopt the Standard Accounting System or an equally efficient system that continue "slow-pay." In fact, if they do not withdraw the extension of credit to such debtors, they are violating the ethics of their profession and working an injury that effects unfavorably, directly or indirectly, every concern in the electrical industry.

In order to promote this plan it is necessary that the Credit Managers be provided with suitable stickers for attaching to statements and collection letters. Attractive leaflets or folders properly illustrated should also be provided and Credit Managers should occasionally send a circular letter to all "slow-pay" customers explaining the numerous advantages to them and to the industry derived by the adoption of efficient accounting and the prompt payment of accounts.

The various trade papers, including "The Viewpoint", can be depended upon to cooperate in this publicity work.

The final object to reduce the number of "slow-pay" customers should be nearer accomplishment with each succeeding month and the Credit Managers should become more insistent each succeeding month in urging or demanding their "slow-pay" customers to adopt the Standard Accounting System at the risk of a curtailment or elimination of credit if they do not comply.

Complaint has been made that when the Standard Accounting System has been installed that it is not properly kept up by the contractor. This is purely neglect and lack of interest on the part of the contractor and if he continues "slow-pay" after installation of the system, he should be given short shift by all Credit Managers. The system must not only be installed but used consistently and efficiently.

The National Association of Electrical Contractors and Dealers will furnish all Credit Managers, upon request, with the necessary supply of stickers and leaflets, etc. Every Credit Manager should consider it a special obligation to assist in this work and to cooperate with his fellow credit men. If only a comparatively few Credit Managers work according to this plan failure will surely result.

It is also suggested that when a contractor installs the system he should indicate this fact prominently on his purchase orders. A suitable rubber stamp should be included with system for this purpose.

The contractors that have efficient accounting systems and that have suffered from irresponsible competition in the

past should be urged to demand the cooperation of all salesmen that call upon them in the establishment of uniform accounting and estimating methods or systems. In other words, it is not fair for a jobber or manufacturer to solicit or take orders from the slow pay contractors that figure jobs below a fair margin of profit, due to lack of proper accounting or estimating methods.

Credit men should also use great care in extending credit to newly organized concerns to make sure they are properly equipped with capital, capable management, experience and other necessary requirements for the foundation of a successful enterprise. Such concerns should be convinced right at the start of the necessity of the Standard Accounting system before credit is extended.

The Credit and Sales Department are entirely responsible for the fact that so many electrical concerns are "slow-pay" and it is strictly up to them to bring about better conditions. Let us all, therefore, with energy and enthusiasm put our shoulders to the wheel and the succeeding months and years will witness continued popularity for the Standard Accounting System and greater prosperity for all, registered in greater percentages of net profits.

V. G. FULLMAN,
Steel City Electric Company, Pittsburgh.

Meeting the Competition of Non-Members in the British Columbia District

To the Editor—

Sir: The wiring of the medium priced and also many of the larger houses in the Vancouver district is being done almost entirely by non-members of contractor-dealer associations, in fact I believe I am safe in saying that 90% of all house wiring is being done by non-members.

As I see it, the remedy lies between the contractor-dealer and the architect, and I think we have far more likelihood of success in the better class of house (that is, any that are worth while) by a thorough and constant education of the architect in the matter of additional outlets.

In this city recently our Cooperative Association entertained all the architects of the city, and there is no doubt that the speeches and the lantern slides made a great impression on those present; this is being followed up by literature and the reports received are very encouraging.

Mr. R. E. Chatfield, our new manager, has commenced his work here and is out among the contractor-dealers all the time, and I am giving as much time as possible with him, so that in thirty days we should have the situation fairly well sized up.

We hope to get a number of these stragglers to our meetings when great efforts will be made to educate them, but although my ideas may be drastic, I am firmly of the opinion that if, after a period of six months or so with Mr. Chatfield working amongst them, there are men to be found who will not pay any attention to him or to others that are trying to do their best, who will not read any trade journals, or make any effort to know their costs—these men should be eliminated from the business by a very simple process.

Of course conditions at the present time are very exceptional, there are men out contracting whose absolute bread and butter depends on getting a job, even if they make two dollars a day at it. Many of these men have a wife and family to keep and are not blamed for cutting prices; with the gradual return to normal again this will be changed and the same men will be back working for the real Contractor.

E. BRETTELL,
Managing Director.
Electric Supply & Contracting Co., Ltd., Vancouver, B. C.

Builders of the West

ASKED what article of food was in greatest daily use,—flour, meat, sugar, coffee or milk, nine people out of ten would answer sugar. They would be wrong. Milk is in continuous use and fills the major demand as a food supply for the human race. Man begins drinking milk when he is a few hours old and he never stops using it.

To E. A. Stuart, president of the Carnation Milk Products Company of Seattle, goes the honor for having placed this essential item of human diet in a form most accessible to the man who might be thousands of miles from the nearest cow. From the frozen north to the torrid equatorial regions, the red labelled cans bearing his name are in daily use and few are the people who have not been benefitted by the accessibility of the product.

From a small farm in South Carolina, Mr. Stuart came West while yet in his 'teens. He obtained a position supplying food to a construction camp on the Santa Fe Railroad. Later he opened a grocery store in a tent in El Paso, and was soon one of the leading business men of that thriving city. Fourteen years afterward he went to Los Angeles, where until 1899 he engaged in the wholesale grocery business there.

Associated first with the production of food and then with its distribution, Mr. Stuart sought new fields where he might better supply mankind with the necessities of life. Applying Scotch methods—for he is a Scotchman—to the problem of supply and demand, he reviewed his experience in the handling of milk. The keeping qualities of this essential food especially during the summer months, was a most serious problem and he evolved the idea of manufacturing an evaporated milk, equal to the fresh product in every respect, yet having unlimited keeping qualities and ease of distribution.

Alaska and the Northwest had just opened, so he turned his steps toward Kent, Washington, where he had heard that the grass was green and the cows sleek and fat. There he built his first condensery, now one of a chain of ten in the four western states of California, Oregon, Washington and Idaho, in addition to the twenty-seven condenseries east of the Rocky Mountains operated by the company of which he is the head.



E. A. STUART

who, as president of the Carnation Milk Products Company, heads a working force of 4000 men in a vital western industry which supplies mankind with the chief item of bill of fare, milk.

Stuart had two battles to fight at the outset,—first, to convince the public that they could and should use evaporated milk interchangeably with the fresh product, and second, to remove the prejudice they had against any milk which did not come into the home in a bottle or a bucket. Stuart won both battles but it has taken twenty-two years of determined application to do it successfully.

Perhaps his greatest accomplishment has been the standardization of the dairy stock throughout the Northwest. He has realized that it is more economical to keep a small herd of good cows than a large herd of cheaper cows. By combining his hobby with his industry he has produced a line of stock which claimed record after record until he has on his 1300 acre farm in Snoqualmie valley, a herd of Carnation Holsteins famous the world

over. An example of his determination to have the best cattle procurable is the record of the sale in which he paid \$106,000 for a herd sire, the highest price ever paid for such an animal. The experiment brought results, for in December, 1920, Segis Pietertje Prospect, a Carnation Holstein broke the world's record for milk production in 365 days, giving a total of 37,314 pounds of milk, or over twenty-two and a half times her own weight. With this, Stuart's dream of a breed of super cows was realized.

His sales motto of "Contented Cows" finds application in every barn on his many dairy farms. "No swearing allowed—these are Contented Cows," applies to employes and visitors alike.

Electricity plays an important part in the Carnation Condenseries as well as on the farm, serving as motive power for nearly every operation in the process from the sterilizers to labelling machines.

Stuart contends that the cow is the world's greatest economical producer of food and man's greatest asset and he is proving it. What was once but a hobby, now benefits the dairy industry of the entire country.

So to E. A. Stuart and his motto of "Pluck Wins" this issue of the Journal of Electricity and Western Industry is dedicated for his work in bettering the conditions of man by supplying him with his chief item of diet, milk; and for giving to the West a great industry.



GRAND FALLS ON THE LITTLE COLORADO

The world has only one Niagara, but aside from this development and the power on the St. Lawrence there are no other really large power developments available in the East. The falls here shown on the Little Colorado have a height practically equal to that of Niagara. This is but one of the possibilities of water power development in the western region which make this the greatest power district of the world.

Future Water Power Development Problems of the West

An Analysis of Western Power Resources and Some New Angles on the Possibilities of 220,000 Volt Transmission Which Will Enter Largely Into the Future Development of the Western Empire

BY F. G. BAUM

Consulting Engineer, San Francisco

FROM the north fork of the Feather River, northward to the Canadian Boundary is undoubtedly the most wonderful water power region in the world, considering the amount of power, climate, land, transportation, timber and other resources. The main Columbia River and the Upper Columbia and the Cascades in Washington are really a water power empire by themselves, and no doubt sometime in the future the water power of the Upper Columbia and that of the Missouri River will be transmitted easterly for the needs of the industries of the North Mississippi Valley states. In the Southwest we have the Colorado, and no doubt in time the power from this stream will be carried to the suffering people of the middle west to prevent the hordes of Iowa, Kansas and Missouri from overrunning Southern California. The Pacific Coast region will ultimately have need for all its power resources.

Power of the Northwest and Southwest

These two streams, the Columbia and Colorado, differ very widely in their power characteristics, although the drainage basins are nearly the same in area. The Columbia has a minimum flow of around 60,000 to 70,000 second feet, with a mean of about 250,000 second feet. The Colorado has a minimum of about 3,500 second feet and a mean of about 25,000 second feet. The differences come largely from the larger precipitation of the Columbia and the fact that the Columbia is regulated through lakes and lava storage. These two streams have large power possibilities and no doubt will play an

important part in the future development of the country.

The Four Rivers of the Cascades

Beginning at the north fork of the Feather River and going north to the Columbia and between the Willamette and Snake Rivers, there is probably the largest continuous bed of lava anywhere in the world. In this area we have four large rivers, the Deschutes and the Willamette flowing to the north in Oregon and joining the Columbia, the Klamath flowing southwesterly to the Pacific, and the Pit River flowing southwesterly into the Sacramento. These four streams have about the same minimum flow—around 3,500 second feet, or about the same as the Colorado. The Deschutes, Willamette and the Klamath have long stream courses, making water power development not so favorable as on the Pit, which has its source in springs east of the Cascade range and has cut a canyon more than a half mile deep on its way going to Sacramento. It is the only river in California which has cut its way through the range. (The Columbia has cut through further north).

The total economic power drop available is over 2,000 feet and we have, therefore, possible dependable power developments on the Pit River close to 500,000 horsepower, which it is planned to take to the San Francisco Bay region. The power output could be practically constant, as storage sites are available to make up the summer deficiency of about 10 per cent, due to irrigation and evaporation.

The value of the water power conditions in the Cascades has been recognized by the Great Western Power Co., the Pacific Gas & Electric Co., the California-Oregon Power Co., the Portland Railway Light & Power Co., the Seattle-Tacoma Power Co., the City of Seattle, the Washington Water Power Co., and others who have made developments or



WATER IN CHILE FROM AN 1,800 FT. RANGE

In South America, the composition of the rock is such that there is little regulation of water flow through the material formation of the Andes, but due to the extreme height of this range, many of the streams are fairly well regulated through snow and glaciers. Most storms come from the east, contrary to conditions maintaining in the north Pacific, and in consequence, the west coast is practically dry as far north as Northern Peru. Water power developments so far have been made largely for the use of mining companies, but some developments are in contemplation in Argentina and other countries east of the Andes which will require quite long transmission lines, making costs quite high compared to those of western United States.

have developments under consideration in this region.

A Ring Bus for Assuring Service

From the power developments of the Pit there is now being constructed a double circuit transmission line for 220,000 v. and to transmit about 150,000 kw. per circuit. In the mountain section single circuit tower, flat construction is being used and in the valley, double circuit towers with the wires spaced vertically. The line for the first substation near Vacaville will be a little over 200 miles long, and to the second substation near the lower end of San Francisco, the distance will be about 265 miles. These two substations will feed into what may be said to be a ring bus of 110,000 volts surrounding the bay of San Francisco, from the north shore, around through Oakland, Newark and up the peninsular to San Francisco, the closing of the ring bus being by means of submarine cables across the bay, from San Francisco to the north shore.

The scheme is quite unique in that the consequences due to partly interrupting service will be reduced to a minimum. The ring bus will be supplied by water power at points diametrically almost opposite in a north and south direction. Reserve steam plants located diametrically opposite in an east and west direction will deliver power on demand north or south as the case might be, depending upon fluctuation in load conditions or will merely float on the lines for regulation purposes. With such a system it will be quite immaterial where the load is connected. The assurance can be given without reserve that a maximum of service can be had.

The initial installment at Vacaville will consist of two banks of 50,000 kva. each in auto transformers, star connected, transforming from 200,000 v. to 110,000 v. with an intermediate tap on the high side of 165,000 volts and a tertiary winding (11,000 v.), delta connected, for serving the synchronous condensers.

There will also be installed at Vaca substation at this time, two synchronous condensers, each of 20,000 kva. capacity, with direct connected exciters. The station is so planned that additions can readily be made, when the load grows to a given point.

All high tension equipment including switches will be mounted out of doors, while the condensers and low tension switching equipment will be housed in a very attractive building facing the state highway running to Sacramento. It should be a constant thrill to the motorist to pass by this interesting place where history is in the making. Opportunity will be offered visitors to view the station in comfort, yet safeguards will be provided for the public as well as plant.

Near Orland will be a second transformer and regulating station, and connections made to present 60,000-v. lines.

Present Stage of Pit Development

Hat Creek No. 1 is now complete and in operation, and Hat Creek No. 2 and the transmission line to Cottonwood will be in operation in about 30 days. It is expected that Pit No. 1 and transmission to Vaca substation, connecting with a new double circuit 110,000-volt transmission line from Vaca substation to Oakland and Newark, will be in operation a year from now. This will give us about



GLACIER FED LAKE ON THE SPEEL RIVER, ALASKA

In Alaska and a large portion of Canada, the range consists of granites, schists and similar rock, so that the stream flow regulation must be largely through snow and glaciers, but due to the high precipitation along the northern Pacific coast, the water power possibilities of this region are large, and in the future, no doubt, the water powers of Alaska and Western Canada will be used to a large extent for the manufacture of pulp and paper products, because of the cheap power and enormous amount of timber in this region.

20,000 hp. average this year from the Pit region, and next year about 80,000 hp. average.

With the system of major power supply solved in this manner the Pacific Gas & Electric Company can calmly await the future. No load problem of the commercial variety will be unsolved. Power restrictions should be a thing of the past.

The Regulation of Voltage at 220 kw.

The regulation of voltage and the insulation of the transmission line are most important problems because without satisfactory regulation of voltage, no system of insulation would be a success. A transmission line of this voltage and length have very favorable characteristics for perfect regulation, if we but make use of the conditions, as the line charging current is of such magnitude that it will of itself give us uniform voltage at all points of the line at about $\frac{3}{4}$ load, if we correct the power factor of the load to unity. To make the regulation practically perfect, from no load to full load, requires the addition of capacity current or reactive current by synchronous regulators, the condensers supplying capacity current at over $\frac{3}{4}$ load and inductive current at smaller loads. The synchronous regulators really become electric stabilizers or electric gyroscopes and hold the system to the fundamental frequency, tying the voltage to the ground, so to speak, to prevent any normal voltage raises.

Explaining the Synchronous Condenser

As an analogy, the action of a long line may be compared to the behavior of a leaf spring which is loaded by a variable weight or force. The variable force or weight would be the resultant of the evils before mentioned which would tend to move the end of the spring from its unloaded position. Assume the spring Aa^1 , Fig. 2, fastened at one end A ; then lagging current flowing over self-induction of lines and transformers will pull the upper end a^1 to the right. The effect of the capacity current or leading current will pull to the left and opposite to the pull of lagging current; and for one particular load this pull is just right to give proper conditions, as has been stated. Generally, however, more force must be applied to the left at full load, to bring the spring into desirable tension. This additional force to the left is supplied by the synchronous condenser. When the load is light the effect of capacity current pushes so much to the left that the condenser is called

upon to reverse its action and push back to normal. This the condenser will do without much grumble.

Imagine that the spring was held in its extreme right position and then let go. It would be set into violent motion and perhaps snap. What in the analogy holds the spring just where wanted at each instant, is the synchronous condenser. (Fig. 3 shows the simplicity of the regulation system.) Of course, this analogy, like all analogies, does not give the true story but it helps to show general conditions, although these are somewhat more severe in actual practice. The effect of this system of regulation is to make the loaded and unloaded position of the reactance voltage to be always to left of Aa^1 , insuring safety.

I would like especially to call your attention to the great importance of improving the power factor of the loads of present power systems by adding more synchronous apparatus. Every synchronous motor helps in economy and regulation and service, from the consumer through the entire series of steps, including the power station. I believe there are many cases where synchronous motors could be submitted for induction motors with great benefit.

Power Lines of the Future

With synchronous condensers placed about every 100 miles along a transmission line, 200,000 hp. or more per circuit may be transmitted 1000 miles or more, with all points of the line practically at the same voltage and for all loads. Also the flow of power may be reversed over sections of the line or over the entire line, thus giving great flexibility of power transportation. Such a system is the only means of satisfactorily solving the problems of the superpower systems, which we will no doubt have in this country. And moreover, such a system largely solves the insulation problem, for it eliminates the large voltage fluctuations that we would otherwise have. Such a system may come to be our national power system, which no doubt will grow out from the present system as a natural development.

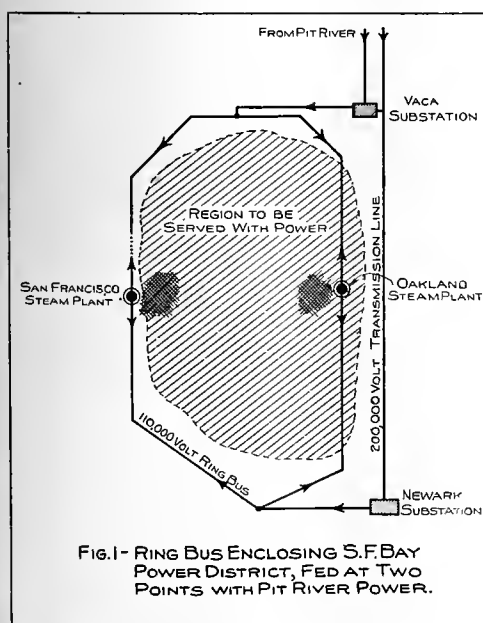


FIG. 1- RING BUS ENCLING S.F. BAY POWER DISTRICT, FED AT TWO POINTS WITH PIT RIVER POWER.

Continuity of power service to the San Francisco region is assured by 220,000 transmission to a 110,000 volt ring bus fed by water power and steam plants—Figure 1. The diagrams of figures 2 and 3 show the operation of voltage regulation through the use of synchronous condensers. Aa^1 may be compared to a spring, attached at A which is kept in position by the pressure of the synchronous condenser. It is desired for best results that the loaded and unloaded position of the reactance voltage be along the circular Ag , as this gives constant voltage and relieves the system of excess voltage strains.

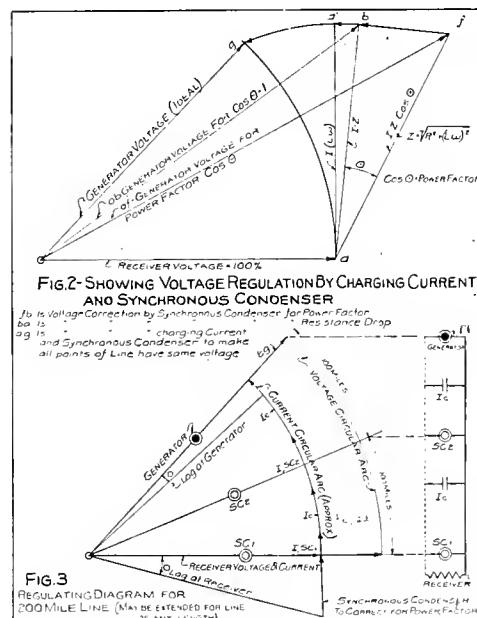


FIG. 3

Common Stock Fundamental in Public Utility Financing

It is Important to Provide Conditions Which Will Encourage the Sale of Common Stock as a Basis for the Later Marketing of Bonds and Preferred Stock in Financing the Western Power Program

BY WIGGINTON E. CREED
President, Pacific Gas & Electric Company

FROM whom are we to get our money for financing? We must get this money just as we get copper wire, cast iron pipe or any other material we use. We must buy it. We pay for it in the form of interest, and buy from two classes of people: the mortgage lender and the investor, the buyer of bonds and the buyer of stock respectively. We cannot hope to secure more than 65 or 70% of our requirements from the lender, from the bond buyer. The balance of the money, 35 or 30% must come from the man who buys stocks. The mortgage lender insists upon an equity behind his bond.

Taking an example on the spur of the moment, suppose we have a structure to build that will cost one million dollars. We can issue bonds at par for 75% of that amount. Assume we sell seven hundred fifty thousand dollars par value of bonds, to net us in cash seven hundred thousand dollars. I have allowed fifty thousand dollars to cover cost of selling, attorney's fees and all other expenses involved. There is still three hundred thousand dollars to raise to secure the full million dollars in cash. Now, suppose we decide to sell two hundred thousand dollars of 6% preferred stock. Taking present market conditions in California, if we sell two hundred thousand dollars of 6% preferred stock, we are going to get about a hundred and sixty thousand dollars in cash. The balance of the money must come from a junior security, from common stock. The investor in preferred stock insists upon this. Like the bond buyer, he demands an equity.

The Importance of Common Stock Sales

The thing we must understand in this financing, the thing our Railroad Commission must understand, the thing our people here must understand, is that the common stock holder is the most important man we have in financing. The old days of financing wholly out of bonds, are gone. There was a time when bonds were issued for as much as 90% of construction costs. That can't be done any more. The equity behind bonds must be 25% or more. For every dollar of common stock which the people of California through their Railroad Commission and their public officials will protect, the power business can secure five dollars from preferred stock and bonds.

Our work cannot go on unless this junior financing is done, and by junior financing I mean the securing of money through stock. It is of fundamental importance that the function of the common stockholder as the guarantor of the investment of the bond holder and the preferred stock holder be understood and appreciated. Our public policy must recognize the necessity of bringing into this busi-

ness the investors who furnish the equity for the preferred stocks and the bonds, which are of course a higher class of investment and sell on a lower basis of interest return. The common stockholder is more than the impulse for the five dollars; he is really a guarantor; he furnishes the guarantee of the investment of the bond holder and the preferred stockholder, and he should be treated with the greatest consideration and should have the greatest assurance of protection that is possible in fairness to the public and to the state as a whole.

Western Support Needed

The future financing of the electrical industry will require some sound thinking along the line of junior financing, which must be done very largely in the West. We can hope to distribute our bonds, perhaps some of our preferred stocks in other sections of the country; but we must look here in the West to our own people to buy the junior securities in these great enterprises.

We must realize here in California how inter-related we are in all our pursuits; we must realize that whatever helps agriculture, is helping industry; that whatever helps industry is helping banking. We must above all realize that in the vanguard of our development must go not only the power companies, but all the public service companies, because it is an economic fact that our general development cannot exceed the development of the public service industry. You can have in the banks all the money that you can conceive of, but if your public service industry is under-developed and unprepared to meet the public need, growth will be stifled. Our people must see that great economic truth; they must understand it and they must feel it, and the public service industry for its part in the business must deserve the cooperation which it asks.

What the California Railroad Commission has Said Concerning Investments in Public Utility Securities —

We might summarize our attitude towards investors in public utility enterprises in California by saying: We recognize your investment will result in common good. You are about to become a partner in an enterprise which will develop the community. We realize that the constitution of the United States and of California and the laws enacted thereunder are designed to protect your investment against confiscation. We are in full accord with the spirit of these laws and propose to proceed in accordance therewith. Furthermore, we believe it to be the sound policy and in the interest of the public that your investment be protected and that you be accorded reasonable returns thereon, recognizing of course, that some risk attaches to all private enterprise. At the same time we inform you that you will not be permitted to make exorbitant profits nor will you be permitted to burden the consumers with poor service. Having said this to the investors we should carry out our pronouncements honestly and consistently, not only as a matter of honor but in the interest of the progress and development of the state.

Tariff Problems From the Standpoint of Western Business

A Plea from a Representative of the Western Fruit Industry for the Re-establishment of a Reasonable Basis for Foreign Trade Through a Sane Handling of the Tariff Questions Now Before Congress

BY CHAS. H. BENTLEY

Salesmanager, California Packing Corporation

DURING the earlier period of western development when there were vast areas of valley lands devoted to the raising of wheat, an export business with Great Britain began. Sailing ships came into San Francisco for the purpose of carrying wheat to Great Britain and other European ports. Later on these vessels offered desirable opportunities for the movement of canned foods and other merchandise to Great Britain and there was laid the foundation for export business that has proven to be very valuable.

Prior to the war, something like 25% of the canned fruits of California were exported. In 1919, it was even larger than that percentage. In 1920, unfortunately, this business was practically all cut off, with the natural result that the canned foods market in general has been seriously depressed. The activities of the war greatly stimulated production and, in 1919 when Europe was still short of food supplies, there was a disposition on the part of importers—not only in Great Britain but in other countries such as Sweden, Norway, Denmark and Holland—to buy freely, anticipating that they would be able to resell canned fruits in Germany. This opportunity, unfortunately, did not arise, but the present depression has served to emphasize the fact not only that the foreign markets are essential to the proper activity of the canned fruit business, but that with any reasonable development of foreign trade on our canned vegetables, such as canned tomatoes, peas and corn, we would not only stabilize domestic markets, maintain our maximum activities in the industry, but undoubtedly secure opportunities which would justify a greater development of the industry all along the line. It is needless to say that this would work out to the advantage not merely of canners and exporters, but also greatly to the advantage of farmers.

The Future Basis for Foreign Trade

It is hoped that the Ways and Means Committee of Congress will report their Tariff Bill in some form so as to provide not merely for the protecting of home products against similar products produced in countries operating on a lower wage scale, but that Congress will write the tariff laws in such manner as to give every possible opportunity for the development of the much needed foreign trade. The danger is that if we write our tariff laws merely from the point of view of maintaining a tariff barrier to protect home industries, foreign countries (which would be our natural market) will retaliate by raising barriers against our products, and what is perhaps more important is the fact that unless we

restore the buying power of these foreign countries (particularly those which are so heavily in our debt), unless we enable them to sell their natural products here and elsewhere, they will never be able to pay the enormous debts owed to our Government and the rate of exchange will remain on its present basis where trade is seriously discouraged. In this much discussed and little understood question of exchange, we must always remember that when the foreign merchant is compelled to buy on an F. O. B. basis in terms of U. S. gold, the price has been high enough, but when he comes to convert his money into U. S. gold and finds that in the exchange the goods are going to cost him as high as 35% more than he expected, it will be seen how little hope there is for the resumption of foreign business so long as the balance of trade remains as it is and the rates of exchange so far below par.

Prospects for 1921

With the depressed conditions of domestic and foreign markets, there was no inducement for heavy operations in the fruit-canning industry of California, or elsewhere, so far as the year 1921 was concerned, but crop injuries in the Middle West and Eastern States, as well as the great drought which still prevails in Great Britain and on the Continent of Europe has brought about a distinct improvement in the market, with the result that the fruit canners of California have found an active market for the limited quantities they have available. These quantities are limited not merely by reason of the earlier policy but by reason of injuries to crops.

There is the consolation that while the season cannot be very profitable with the limited output, canners look forward to seeing a clearing of stocks in the hands of wholesalers and retailers, so that a better market may be secured next year.

The new tariff bill, as it now stands, provides trading clauses which should enable the Government to effect commercial treaties with other nations. This feature of the tariff is vastly more important to the industries of California, than would be any so-called "protective tariff". We need these foreign markets, to stabilize our domestic markets and insure prosperity for the manufacturer as well as the farmer and producer, but we should remember that if we expect to sell in those foreign markets, we will have to buy products from them. It is only by such conditions that international trade can be developed, and it is only under such conditions that our late associates in war may be enabled to repay their vast obligations to this country and restore their buying power for our products.

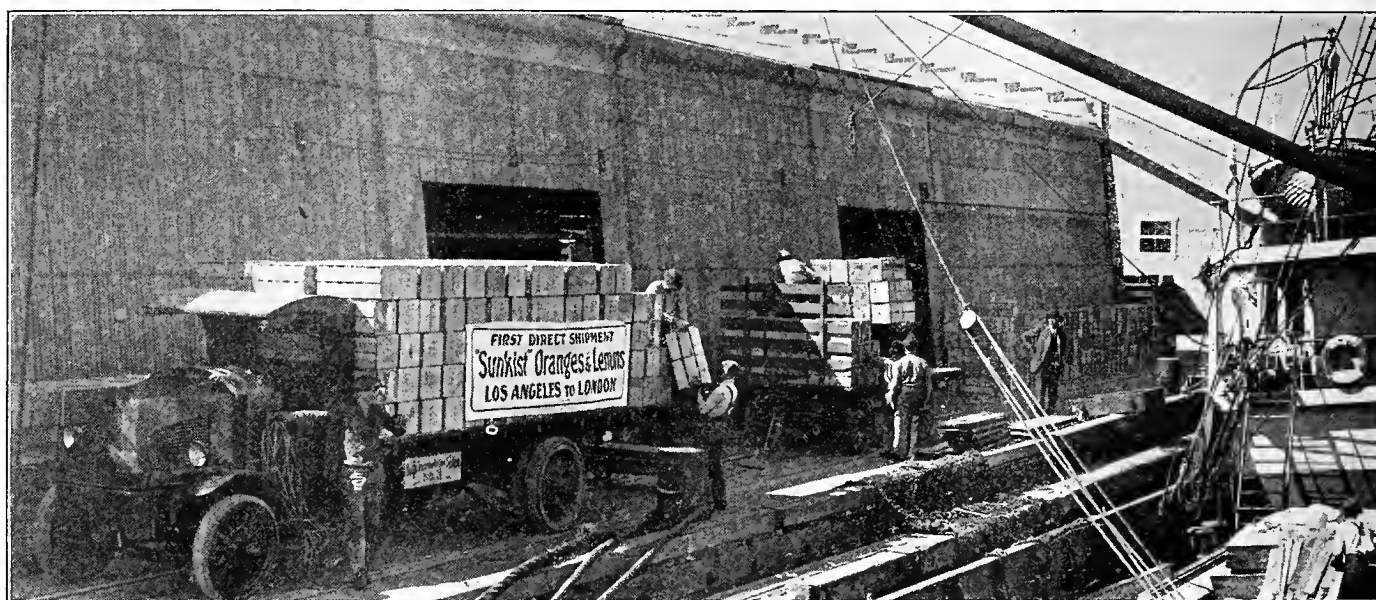
Is Water Shipment the Answer to Western Freight Rates?

The California Fruit Growers Exchange Experiments with Water Shipment of Citrus Fruit in the Effort to Solve One of the Most Troublesome of Western Distribution Problems

BY C. K. CHAPIN

TRANSPORTATION is the great problem of Western industry. Markets are ready within a world wide compass to absorb all the products which the West can supply, provided these can be transported at a reasonable cost to other consuming centers. The high freight rates has had more to do than any one other factor in the uncertainties of this period in the country west of the Rockies and the experiment now being carried on

picking is speeded up in orchards and work rushed through the 200 or more packing houses, which are distributed throughout the territory. The fruit is hauled to the packing houses on trucks piled high with the field boxes, the packing houses grade and weigh the fruit to facilitate future credit to the grower—and it is packed and loaded into cars from their own platforms for rail shipment. In this way 1000 additional cars over and above the normal ship-



Since last January, twenty boats have sailed from Los Angeles with California citrus fruits as part of their cargoes, some carrying as many as twenty thousand boxes of fruit. Electrical freight handling devices will undoubtedly come to be an important factor in speeding shipment by water—a vital consideration in the transportation of perishable products.

by the citrus growers of California looking toward the use of water shipment as one of the solutions of the problem, is of general industrial interest.

Present Shipment by Rail

The California Fruit Growers' Exchange, with headquarters in Los Angeles, is the largest non-profit organization in the United States. A 50,000 car citrus crop is annually distributed and sold throughout this country and Canada, even going to London and Rotterdam. It is obvious that the distribution problem becomes one of especial importance. Fruit cannot be kept for any length of time before reaching the market, nor will it bring good prices unless it has been handled carefully in transit.

Speed is secured at the producers' end by the close contact maintained between the 10,500 growers and the management of the exchange. Little or no fruit is carried in storage. When the district offices report a receptive market—and when the grower gets only 26 cents out of the consumer's dollar (last year it was 40 cents) it is important to take advantage of sudden favorable developments—

ment were handled during the months of June and July this year.

There seems to be no slip in this arrangement, which undoubtedly places the orange crop on the market in good time, with a great flexibility facilitating economy of operation. The fact remains, however, that transportation costs on rail shipments have risen from \$0.94 per box to New York in 1918 to \$1.64 at the present time—and prospects seem none too good for immediate relief. Considerable attention has therefore been given to the possibility of water shipment via the Panama Canal, to the Atlantic seaboard and to Europe.

Problems of Water Shipment

Twenty boats have steamed out of Los Angeles harbor, with oranges and lemons as part of their cargoes, since last January, some carrying as many as 19,718 boxes of fruit. The transportation companies and the U. S. Department of Agriculture, are lending willing hands to the many detail problems of citrus fruit shipments via the canal. They are studying the 6,000 miles to New York, from

every possible viewpoint, the air and water temperatures, the wind, rain or fog encountered at different times during a trip, how best to maintain uniform humidity, and to determine the most favorable hold in the boats. All, with the idea of delivering the fruit in as good condition after 20 to 30 days on the water, as it now goes by rail in 12 to 14 days. These investigations point to a solution of all difficulties by training the stevedores in correct methods of citrus handling, and by specially ventilated compartments with little or no refrigeration even for oranges. Early sound oranges, particularly



Laying the boxes "on the side" was thought to be most seaworthy, but the injury from being walked upon by the stevedores quickly proved the "on end pack" to be the better of the two.

Valencias, seem to stand the long journey as well as lemons. It has been the practice to ship oranges by refrigeration, and lemons by ventilation, in rail transportation.

Shipments to be made by water, are carried by truck trains, from the packing houses to the dock, and as often as possible, have their loads transferred direct from truck and trailer, to the hold of the boat. These trucks and trailers carry 200 boxes each, or a carload for a combined unit of truck and trailer. It is customary to make the trip to the harbor during the night hours, in order that initial temperatures of the fruit may be kept low.

Shipping Costs via Panama

Shipments are now being sent to London, by the all-water route, for the same cost as by rail to New York, and the all-water shipments to the Atlantic Coast ports save 1/3 of the rail transportation charges. When the Holland-American liner Eemdyke carried 10 carloads of oranges to London in its refrigerated hold, the shipment was collected from 10 packing houses, trucks driving during the night to arrive at the docks just at dawn. Some of the fruit was trucked 70 miles, yet it arrived in London thirty days later, to sell at auction for fancy prices.

It is the custom to sell at auction to the jobbers, upon arrival at ports of destination. This lessens the handling of the fruit, and shortens the time between tree and consumer. Incidentally the doing of a cash business, accounts for the strange figure in the annual report of bad debts and uncollectable bills. During the year ending August 1, 1920 such

losses amounted to \$435.38 or 3/4000 of 1 per cent. This, on a \$60,000,000 gross business. Small wonder that the Exchange has grown, so that it handles 78 per cent of the California orange crop and 84 per cent of the lemons.

Establishing Wider Market

The Sunkist fruit is handled entirely without payment of commissions. All sales are made by the carload through the 63 district offices which are established throughout the United States and Canada, covering some 850 markets. Through these salaried representatives the fruit is distributed among 2,500 jobbers, who in turn supply 450,000 retailers. This service costs the grower the sum total of 2 and 1/100 per cent of the delivered value of the fruit. And the grower gets his money during a normal season on an average of three weeks from the day he delivered it to the packing house.

Extensive field work is carried on among the retailers to offer helpful advice in marketing the fruit and also among the consumers by house to house canvassing. The purpose of this survey was to study the habits and tastes of the ultimate consumer, with the idea of reflecting popular taste in national advertising. Last year more than 158,000 mail requests were received at headquarters from housewives asking for free circulars, recipe booklets, etc., in addition to 48,000 dealers who asked for display matter and sales helps. All work of the Exchange is under the supervision of G. Harold Powell and a staff of technical investigators.

Freight rates are a question of great importance to a business of this magnitude, and the pos-



Commission merchants examine the fruit at the destination piers, and the entire shipment is sold at auction in a few hours. As a result of this method of doing business, bad debts during the past year amounted to not more than 3/4000 of 1 per cent.

sibilities of water shipment are looked to as a possible solution of a situation which has threatened greatly to curtail western markets.

Other industries will, of course, have special problems of their own which must be met in undertaking transportation by water and the time element as well as the warm weather of the Canal Zone must be considered but the success which has attended this experiment in the handling of perishable fruit suggests great possibilities in this field.

What Can Be Done to Eliminate the Wastage of Industry

An Analysis of the Just Completed Report of the National Engineering Committee on the Elimination of Waste in Industry Which Fixes the Blame for Present Conditions and Suggests Remedies

FACTS and not opinions are the basic need in solving the varied problems of the modern industrial world and it is the application of the quantitative mind of the engineer to present industrial conditions that gives particular interest to the report on elimination of waste in industry just issued by the Federated American Engineering Societies as the result of five months' investigation.

Methods of Investigation

The committee, consisting of eighteen engineers, conducted an analysis of the extent and cause of waste in six typical branches of industry including the building trades, men's ready-made clothing, boots and shoes, printing, metal trades, and textile manufacturing. The method used amounted to a comparison of the best conditions with the average conditions, so that no arbitrary standard was set up as to what constitutes "waste."

In the six industries studied, with their tremendous annual output, waste was found to be very large, and the committee believes that investigations of other industries will reveal similar preventable wastes, traceable in general to the same causes.

Each engineer of the committee who made a field investigation was thoroughly acquainted with the industry he studied, and the deductions drawn from the facts collected by him were made on the basis of expert knowledge and the composite experience of the entire committee.

Major Causes of Waste

The average of management was found to be much below the standards set by certain individual executives who have achieved notable success. For instance the points assessed as waste against the best plant studied in the metal trades amounted to 6:00, while the points assessed against the average of all plants studied in the same industry were 28:66, the ratio of the best to the average being 1:14½. In the boot and shoe manufacturing industry the ratio was 1:3.

According to the report, waste in industry is attributable to:

1. Low production caused by faulty management of materials, plant, equipment and men.
2. Interrupted production, resulting from idle men, idle materials, idle plants, idle equipment.
3. Restricted production intentionally caused by owners, management of labor.
4. Lost production caused by ill health, physical defects and industrial accidents.

The responsibility for the waste—that is, the ability to eliminate it—is charged in varying degrees to management, labor and outside contacts, (the public, trade relationships, and other factors), and is evaluated in the report in "points" which in turn are summarized in percentages. The percentages reveal the rather unexpected fact that over

50% of the responsibility for waste rests with management and less than 25% with labor. The metal trades and men's clothing industry show 81% and 75% respectively of managerial responsibility for waste.

Low Production

As factors in low production the report enumerates faulty material control, lack of cost control, lack of research, inefficient workmanship and faulty sales policies. It was found that haphazard methods of planning result in innumerable delays for want of material, in frequent layoffs and consequent dissatisfaction, and a high labor turnover. Gambling in raw materials is cited as another form of inadequate material control, and consequent waste.

In the matter of standardization, the report quotes as an example the fact that the Federal Reserve Bank check will not cut without waste from any of the regular sizes; that the standardization of newspaper columns to one size would make possible an annual saving of \$3,000,000 to \$5,000,000 on composition and plates alone; and that a draft questionnaire issued during the war was of such non-standard size as to require special filing cabinets.

The majority of industrial plants keep no proper account of costs, and consequently have no accurate way of locating "leaks." A survey of the printing plants in New York City disclosed the following:

- 56 plants use standard cost system.
- 187 plants with no cost system, but with a knowledge of all general costs.
- 741 plants with no cost system and incomplete knowledge of all general costs.
- 554 plants with no cost system and incomplete knowledge of general costs.

The first two groups made money, the last two lost money in 1919.

Examples are cited of waste resulting from haphazard management: A shoe factory having a capacity of 2400 pairs of shoes a day could turn out for a considerable period only 1900 pairs because of shortage of needed racks. Another factory has 50,000 pairs of shoes tied up in the fitting room instead of the normal 15,000 because of congestion of operations. In another case a factory producing 700 pairs of shoes a day had 36,000 pairs in its fitting room, or ten times the normal supply. An entire factory was held up for several days waiting for leather heels.

"In most tailoring shops there are no dispatching stations for recording the progress of work * * No systematic method of keeping the operators supplied with work is followed; this practice results in a congestion of work at some points, idleness at others."

A high labor turnover is regarded as a rough index of one of the common wastes resulting from

inadequate labor management. The average labor turnover for the year 1920 in the metal trades was 160%, while the highest turnover was 366%—figures which certainly indicate waste in the latter case, even presuming the former to be satisfactory.

Cancellation of orders is scored as a fruitful source of industrial waste, and a curtailment of the privilege of returning goods ordered and received is advocated.

Interrupted Production

Unemployment, one of the causes of interrupted production, is divided into four classes—the permanent margin, involving somewhat over a million men; unemployment due to industrial depressions; intermittent unemployment and unemployment due to labor disturbances. The report states that the last named, contrary to popular opinion, does not appear to constitute a major source of reduced production. Intermittent unemployment, on the other hand, is responsible for a great deal of waste of various kinds. The clothing worker is idle about 31% of the year; and the building trade workmen is employed only about 190 days in the year.

Basing production schedules on a carefully formulated sales policy determined from an intensive study of markets, will stabilize production, say the investigators, and do much to reduce the harmful effects of seasonal manufacturing promoted by the present haphazard methods.

Idle material and idle equipment constitute a serious form of waste. Clothing factories are built 45% larger than is necessary; the shoe industry has a capacity of 1,750,000 pairs of shoes a day, and produces little more than half the number; throughout the metal trades, standardization of products would permit of large reductions in plant and equipment.

Restricted and Lost Production

"Some of the evils of restricted production are chargeable to owners and management. In the building trades contractors, builders and supply dealers have restricted production by maintaining high prices, collusion in bidding and unfair practices. At times there has been collusion between employers and labor, tending to raise prices unduly."

Restrictions imposed upon labor by the union also tend seriously to limit production, especially in one or two industries.

Under causes of lost production the report lists ill health and industrial accidents, and quotes an estimate that the economic loss from preventable disease and death amounts to over \$700,000,000 annually among industrial workers, and that in the matter of accidents a total of more than 12,000,000 days a year could be saved in the building industry alone by the application of safety methods.

It is calculated that 75% of industrial accident losses could be avoided, with a saving in direct, clearly ascertained losses alone of a quarter of a billion dollars per year to employers, and half a billion to employees. The report states that "in New York State during the four years 1910 to 1914 more fatal-

ities occurred in building and construction work than in all the factories put together although about four times as many people are employed in the factories as are employed in building and construction work.

Widespread Cooperative Effort Necessary

The report includes specific recommendations to management, labor, the public and the government, based on the part played by each in the various sphere of waste, and the capacity of each for helping to remedy the conditions. Among these is the formation of comprehensive trade organizations through which common problems can be studied and common remedies applied. These organizations would promote programs for the standardization of cost accounting methods, the introduction of standardized material specifications, the establishment of production standards, the standardization of equipment and the standardization of finished products.

Adjustment of Federal laws to permit certain combinations is advocated on the ground that such combinations can materially contribute towards stabilization, and eliminate much of the waste resulting from periods of slack production and unemployment.

The report recommends the creation by the government of a national industrial information service to furnish timely, regular and complete information on current production, consumption and available stocks of commodities, supplementing the work of private agencies; also the establishment of a national statistical service covering employment requirements and conditions throughout the country.

The committee expresses the opinion that "before there can be a material reduction in the sum total waste in industry, much earnest, painstaking work must be done. There will be need of both co-operative and individual effort. As regards groups, each must frankly face its own responsibility and meet its own duties. Each individual plant executive or worker must discover his own opportunities and then accept responsibility for performance." The report "lays the foundation for knowledge of the destructive influences which have too much controlled in the past."

The Service of the Engineer

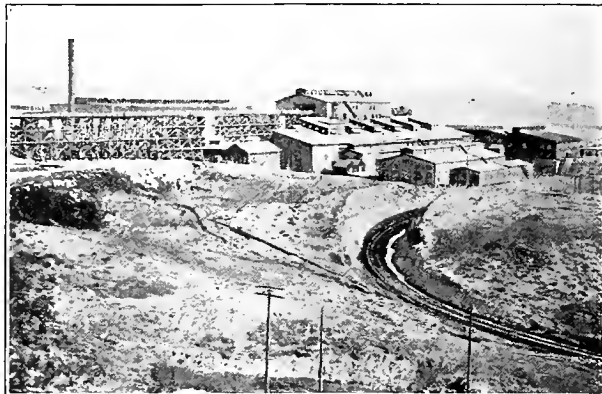
The engineer, it is claimed, has an important part in this work of eliminating waste from industry. He comes into close contact with all types of industrial problems, and yet is in a position to give expert and disinterested judgment. "The first need is for definite and quantitative industrial information on a multitude of points . . . The duty of the engineer is preeminently a duty to enlarge the boundaries of knowledge. His lifelong training in quantitative thought, . . . leading to an objective and detached point of view, his strategic position as a party of the third part with reference to many of the conflicting economic groups, and above all his practical emphasis on construction and production, place upon him the duty to make his point of view effective."

Western Mines Use Over 1,250,000 Kw-hr. in 1920

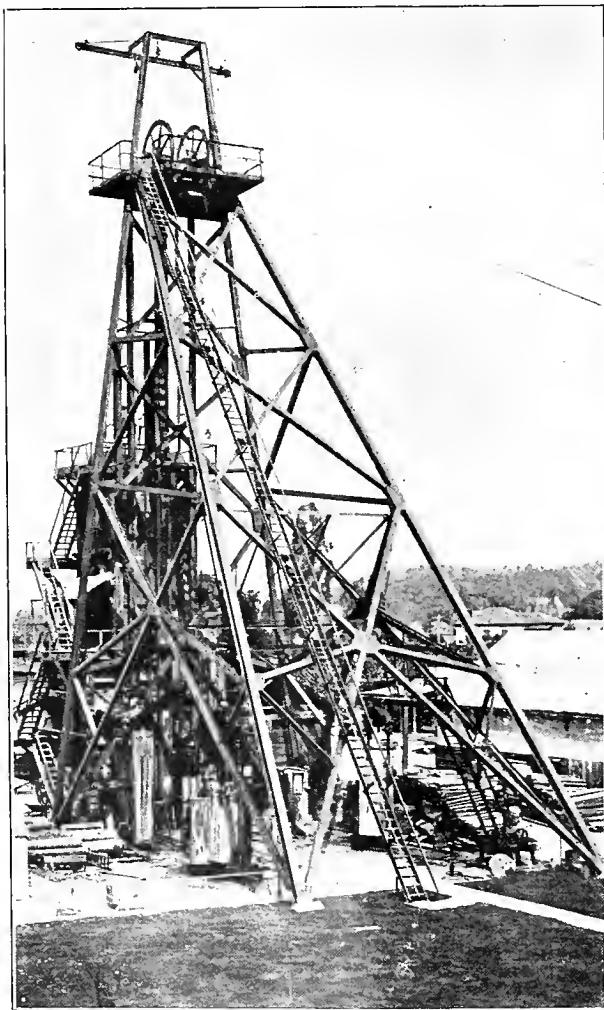
One of a Pictorial Series Featuring Interesting Applications of Electric Service, Advances in Home, Industrial and Power Construction and Noteworthy Developments in Western Progress



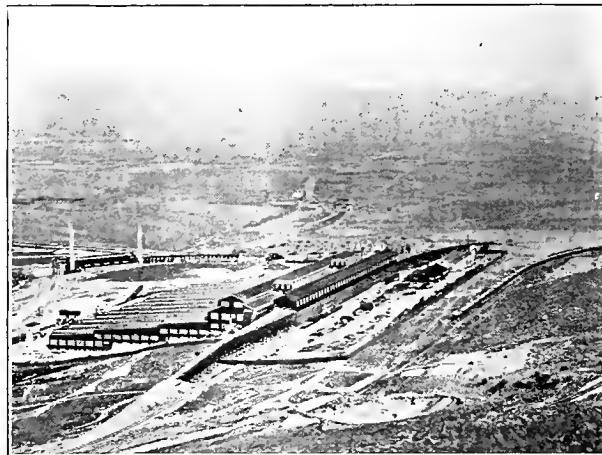
Substation of the Goldfield Consolidated silver mines at Goldfield, Nevada. 3510 hp. in motors is used in the mines and mills of this field. The silver market is prosperous at the present time and the mines of Nevada, as well as those of the Northwest are kept busy.



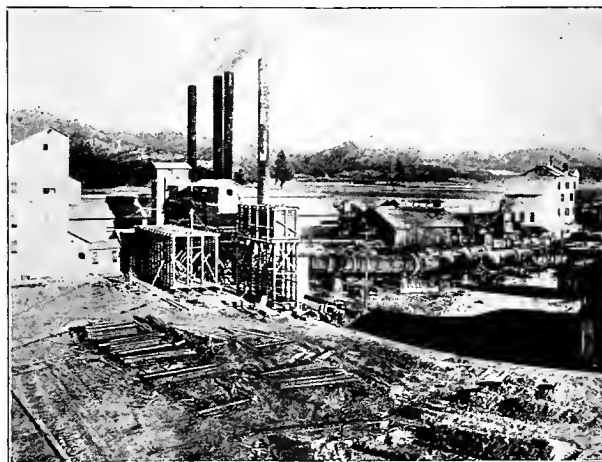
Electrolytic Zinc Plant of the Anaconda Mining Company at Great Falls, Montana. There are 626 motors in service, with an installed capacity of 70,000 hp. This is the largest zinc plant in the world and like most western mining operations, is completely electrified.



Main working shaft of the Plymouth Consolidated, California. The gold mining industry is enjoying something of a revival, following its recent serious depression. Twenty per cent of all power generated in the West during 1920 went into the operation of western mines.



The Magna Mill of the Utah Copper Company at Garfield, Utah, is the largest copper concentrating plant in the world. It represents a connected load of 19,739 hp. in motors. Copper forms the major mining load of the Southwest.



The electrified plant of the Northwest Magnesite Company near Spokane. Magnesite, borax, chromite, and talc are among the important non-metallic western mining operations. Their use of electricity helps to make the western mining load the heaviest of any industry.

Study Course

A University Accounting Course for the Contractor-Dealer and the Business Men in the Small Industrial Plant

BY PAUL B. KELLY

XIII—THE PRACTICAL OPERATION OF THE STANDARD ACCOUNTING SYSTEM—THE VOUCHER DISBURSEMENT SHEET

THE Voucher Disbursement Sheet was devised in order to afford a convenient means of listing and summarizing the data on bills received from creditors and on memorandum vouchers. The voucher disbursement sheets are used in order to secure monthly totals on the basis of which journal entries can be made to record the combined effect on the general ledger accounts of all the vouchers listed on these sheets. The manner in which invoices and memorandum vouchers are numbered and placed on a voucher file after being posted to the Accounts Payable ledger was explained in Lesson No. 4. This lesson will not touch upon the details covered in that lesson but will deal exclusively with the voucher disbursement sheet as a means of summarizing the vouchers for accounting purposes.

The voucher disbursement sheet is not an absolutely essential part of the accounting system. It is only a convenience. Each invoice or memorandum voucher could be journalized separately. For every voucher placed on the voucher file a separate journal entry in the following general form could be made:

CREDIT	DEBIT
Accounts Payable Acct.	Some asset, liability, or net worth account.

No doubt this procedure would involve a great deal of time. Fortunately, a short cut to the same results can be taken.

If you will look at the general form of the journal entry required for every voucher, you will note the fact that every voucher results in a credit entry to the Accounts Payable account. You know this by experience, for you were shown in Lesson No. 4 that every voucher is posted to the credit of some account in the Accounts Payable ledger. The fact that every voucher creates a credit to the Accounts Payable account alone would make it advantageous to list them in order to make an entry in total to this account.

On first thought, it would appear to be impractical to provide a means of summarizing the corresponding debits. You will observe from the general form of journal entry required by every voucher that the corresponding debit may affect an asset, a liability, or net worth account. In fact, there are only a few accounts in the ledger to which the corresponding debit may not be made. Obviously, every account that might be debited as the result of a voucher could not be provided with a special col-

umn, for some fifty would be required, whereas there is only room on the Voucher Disbursement Sheet for twelve columns beside the one required for the Accounts Payable account.

The solution of the difficulty lies in making the best use of the means at hand. Eleven of the columns are assigned to the accounts to which the corresponding debits are most frequently made. The remaining column is used for the entry of all debits to accounts which are not provided with individual columns. As a result of this scheme, monthly totals can be obtained and posted for the Accounts Payable account and eleven other accounts.

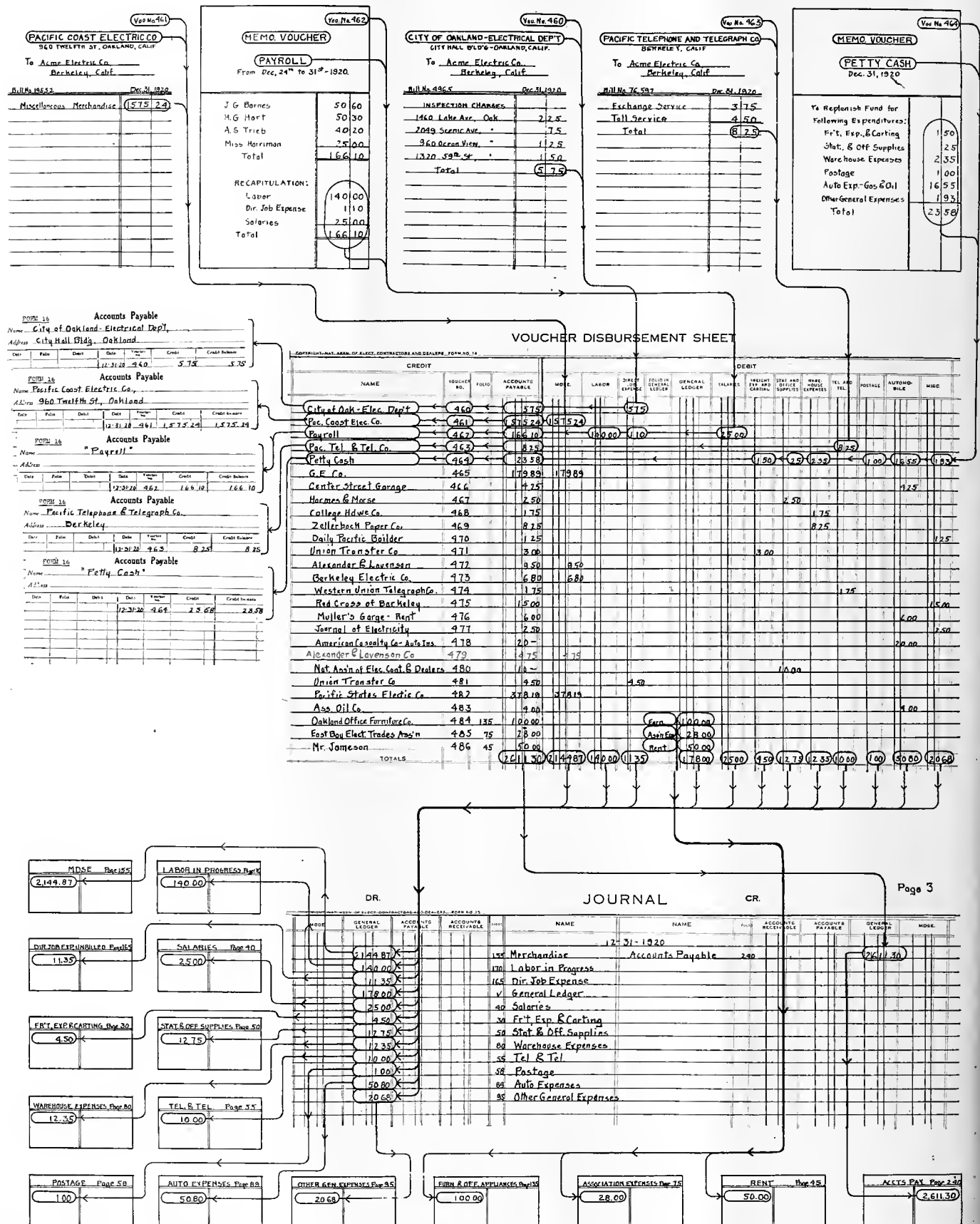
The items entered in the remaining column must be posted individually to the accounts in the general ledger. The saving in time which this plan effects is enormous. Not only are all the credit items posted in total but the majority of the debits are posted in total also.

At this point, stop to carefully study the form and arrangement of the voucher disbursement sheet shown in the chart. You will find the principle of this form very simple to understand. Observe that it is divided into two parts—a credit side and a debit side. The "Credit" side is on the left. Under this heading columns are provided for the name of the creditor, the voucher number, and the total amount of the voucher. A "folio" column is also provided, the use of which will be explained later.

In the column headed "Name", the name of the creditor is entered. Abbreviate the names of the concerns with whom business is done in order to save time. Use initials and abbreviations as much as possible but do not make the record unintelligible. Place the number of the voucher in the "Voucher No." column. In the "Accounts Payable" column enter the total amount of the voucher. Every voucher causes an entry to be made in this column.

The title "Debit" is given to the right side of the sheet. Under this title eleven columns are provided for the accounts which are most frequently affected. Note the names given to these columns. The nature of the items are posted in each of these eleven columns should not at this point need to be explained. If Lessons No. 9 and 11 were thoroughly learned, no difficulty should be experienced in deciding upon the column in which a debit is to be posted. Frequently a single voucher results in debits to several columns. The vouchers for "Petty Cash" and "Payroll" shown in the chart are illustrations.

When a voucher involves a debit to an account which is not provided with a special column, the debit



is entered in the column headed "General Ledger." The name or the number of the ledger page to which the charge in the "General Ledger" column should be posted is entered in the column immediately to the left named "Folio in General Ledger."

Whenever a voucher is listed on the voucher disbursement sheet the amount of the voucher must invariably be entered on both the credit and debit sides. In short, the amount is first entered in the "Accounts Payable" column and then in one of the twelve debit columns. On every line of the voucher disbursement sheet there will be a credit offset by a debit. As a result, the total of the Accounts Payable column will equal the sum of the totals of all the other columns. This fact should be used as a means of checking the additions of the columns.

When a voucher disbursement sheet is filled, the columns are added and the totals are carried forward to the top of the next sheet. When this sheet is filled, it is added and the totals are carried forward again and this process is repeated until monthly totals are obtained. These totals are the basis upon which a journal entry is made to record in the ledger the combined effect of all the vouchers listed during the month.

By referring to the chart, you will see how simple it is to journalize the monthly totals which are produced by the voucher disbursement sheet. The total of the Accounts Payable Column forms the credit element of the journal entry. The several totals of the columns on the "Debit" side of the sheet form the debit element of the journal entry. The manner in which such a journal entry is posted to the proper accounts in the general ledger is graphically shown by the chart.

The "General Ledger" column of the voucher disbursement sheet needs further explanation. You will observe that the item of the journal entry called "General Ledger" is not posted to the ledger accounts. Instead, the items entered in the "General Ledger" column are separately and directly posted to the general ledger accounts from the voucher disbursement sheet. In this way, the equality of the debits and credits entered in the general ledger is maintained. The accompanying chart shows graphically how the items were posted.

The number of the general ledger page to which an item in the "General Ledger" column is posted should be entered in the column headed "Folio." In the folio column of the ledger page, the voucher number of such a special charge should be entered. In this way the cross referencing is maintained.

If you wish still further to save time, the journalization of the monthly totals produced by the voucher disbursement sheet may be entirely eliminated. These totals may be posted directly to the accounts which they affect. If this is done, the ledger page numbers should be noted on the voucher disbursement sheet near the items posted. This procedure does not violate our rule that no entry shall be made to the ledger which is not previously recorded in the journal because the voucher disbursement sheet is a specialized form of journal.

Posting the Vouchers to the Ledger

The voucher disbursement sheet should be in view when the vouchers are posted to the Accounts Payable ledger. As each voucher is posted to the subsidiary ledger, the credit entry to the creditor's account should be compared with the amount entered in the "Accounts Payable" column on the voucher disbursement sheet. By means of a careful comparison of this sort, the equality of the credits posted in detail to the Accounts Payable ledger and the credit to be posted in total at the end of the month to the Accounts Payable can be insured.

The Accounts Payable account in the general ledger is a controlling account and is similar in principle to the Accounts Receivable account. At the end of the month after a trial balance is taken, the balance of the Accounts Payable account should equal the sum of a list of the balances shown by the accounts in the Accounts Payable ledger. The Accounts Payable account thus "controls" the Accounts Payable ledger and serves as a check on its accuracy.

When the ledger is opened, the amount which is to be credited to the Accounts Payable account is found by securing the total of the balance exhibited by the accounts in the Accounts Payable ledger. The state of equality thus started with, is maintained by entering the debits and credits which are posted in detail to the Accounts Payable ledger in total to the Accounts Payable account. The voucher disbursement sheet, as you must have observed, provides the means by which the total to be posted to the controlling account is secured.

Credit Memoranda

When merchandise is returned to the concern from which it was purchased, or, when for any other reason it becomes necessary to reverse the effect of some voucher previously entered in the accounts, a little problem arises. This problem is solved in a manner similar to that used in handling credit memoranda for customers' accounts.

If a credit slip has not been received from the creditor, a memorandum credit slip should be made by the contractor-dealer. The credit slip or memorandum credit slip should then be given a voucher number and entered on the voucher disbursement sheet just as an invoice would be, except that the entry on the voucher disbursement sheet is made in red ink instead of black. The amount of the credit is posted to the debit of the creditor's account in the Accounts Payable ledger. The red ink figures on the voucher disbursement sheet are, of course, subtracted from instead of added to the black ink figures. Note voucher 479 on the chart.

It is absolutely necessary that the person who lists the vouchers on the voucher disbursement sheet have a thorough and complete knowledge of the items that are debited to each account that is operated in the Standard Accounting System. Otherwise, items will be entered in the wrong debit columns and misinformation instead of reliable data will be the only fruit resulting from the work.

Increasing Production in Industry

Shortcuts in Management and New Power Applications That Have Reduced the Cost of Manufacturing Processes or Increased the Rate of Production.
Ideas and Suggestions by Practical Men.

Efficiency Increased by Short-Cut in Answering Routine Letters

In the office of the N. Slater Company, Limited, hardware manufacturers at Hamilton, Ontario, there has been worked out a method of answering order letters that has cut out a lot of office expense and labor. It seems to be working out at almost 100 per cent efficiency. In taking care of orders the writer found that he was writing the same thing many times a day, and to overcome this repetition in interpreting orders we indicated certain stock phrases by numbers according to the

a

1	2	3	4	5	6	7	8	9	10	11	12	13
14	15	16	17	18	19	20	21	22	23			
24	25	26	27	28	29	30	31	32	33			
34	35	36	37	38	39	40	41	42	43			

Each letter is rubber stamped with this impression and it is but the work of a moment to indicate the desired reply.

chart. Each number represents a different term, delivery date, route, charge or department.

We had a rubber stamp made with all these numbers, and every order that comes into the office is stamped and passed along to the order clerk who interprets the order by scratching out certain of the numbers; it is then passed along to the stenographer who makes out our regular order or billing form.

To illustrate the use of this chart, we will say that we receive an order from John Jones & Company for 1000 switches. We will designate Dept. "A" the Switch Dept., "B" the Wire Dept., "C," etc., for other departments. This order for switches carries terms of 1% 10 days, net 30 days; so we cross out the number "2." We have the material in stock and can make delivery at once, and indicate this by crossing out number "15"—the customer asks us to ship it G. T. R. prepaid, so we cross out number "22"; the freight charges, however, have to be charged to the customer and we cross out number "35." If we did not happen to have the material in stock and we had to make it up in the factory we would have to make out a part requisition on the production department. To accomplish this we cross out number "38" and to indicate the department we write "A" above the stamp.

This example shows the saving in time to cross out number "2" instead of writing "1% 10 days, net 30 days," also we save writing the words "at once," although the stenographer has

THIS DEPARTMENT

will be devoted to a discussion of practical problems of factory operation and management. Readers' requests for information will be published in each issue, together with the answers to previous questions. It is hoped that readers will take full advantage of this opportunity to profit by the practical experience of others and to give others the benefit of their own discoveries. Space rates will be paid for answers which are published.

to put this in when acknowledging the order on the acknowledging form. For "22" we save the writing of "G. T. R. Prepaid," No. "35" is put after "G.T.R. prepaid" and then, when the freight bill comes in, the checking department naturally charges the freight to the customer, and it saves the words, "Charge freight to customer." No "38" saves writing out the instructions to make out a part requisition on the production department.

KEY TO NUMBERS USED

- | Terms | |
|-------------|------------------------------------|
| 1 | 1/2 of 1%—10 days, Net 30 days |
| 2 | 1%—10 days, Net 30 days |
| 3 | 2%—10 days, Net 30 days |
| 4 | 2%—10 days, Net 60 days |
| 5 | Sight Draft Against Bill of Lading |
| 6 | Express C. O. D. |
| 7 | 2%—10 days, Net 60 days |
| 8 | Net 30 days |
| 9 | Net 60 days |
| 10 | Cash |
| 11 | |
| 12 | |
| 13 | |
| 14 | |
| Delivery | |
| 15 | At once |
| 16 | 1 week |
| 17 | 2 weeks |
| 18 | 3 weeks |
| 19 | 4 weeks |
| 20 | Soon as possible |
| Route | |
| 21 | G. T. R. Collect |
| 22 | G. T. R. Prepaid |
| 23 | C. P. R. Collect |
| 24 | C. P. R. Prepaid |
| 25 | Can. Exp. Collect |
| 26 | Can. Exp. Prepaid |
| 27 | Dom. Exp. Collect |
| 28 | Dom. Exp. Prepaid |
| 29 | Lake & Rail Collect |
| 30 | Lake & Rail Prepaid |
| 31 | Boat Collect |
| 32 | Boat Prepaid |
| 33 | Freight Collect |
| 34 | Freight Prepaid |
| Charges | |
| 35 | Charge freight to customer |
| 36 | Deduct freight from invoice |
| 37 | Best Way Collect |
| 38 | Part Requisition |
| 39 | With other goods |
| 40 | Express Collect |
| Departments | |
| A | Switch Department |
| B | Wire Department |
| C | Etc. |

This idea saves at least one hour per day ordinarily, and in busy seasons saves many hours per day.

We trust this scheme may be of considerable value to your readers, and we take pleasure in passing it along as we have found it a great time saver.

W. N. ELLIOTT,

Hamilton, Ontario, Canada.

Power Factor Rates in California

Is there such a thing as a power factor rate in California? Just how does this operate? Under what conditions might advantage be taken of it. E. D. C.

Replying to the question of "E.D.C." relative to power factor rates in California:

There is to my knowledge only one schedule of rates in California at the present time which accounts in direct terms for the variable power factor of the consumer's installation. This is a rate on the system of the Great Western Power Company of California for electro-chemical and electro-metallurgical service and is not an open schedule, service being granted at the option of the Power Company or upon order of the Railroad Commission, and limited to installations of not less than 500 kilowatts nor more than 5,000 kilowatts and where the power factor is not less than 85%. The schedule may be stated in general to read:

\$3.60 per month per kw. of maximum demand based upon 100% power factor plus.

3c per month per kw. of maximum demand for each 1% that the average monthly power factor is less than 100% to and including 95%.

4c per month per kw. of maximum demand for each 1% that the average monthly power factor is less than 95% to and including 90%.

6c per month per kw. of maximum demand for each 1% that the average monthly power factor is less than 90% to and including 85%.

The rate schedules fixed in California for general service have in practically all instances been based upon the more or less natural power factor obtained from the use of equipment installed which has in general been induction motors. In one or two classes of service the inherent power factor of the installations has been accounted for in the rate.

It is the writer's opinion that except for very large installations where power factor control can be readily maintained, it would be cheaper and more satisfactory to have the correction of low power factor handled by the power utilities.

LESTER L. READY,

Chief Electrical Engineer,
California Railroad Commission

Gas Welding Outfit Transported on Motorcycle

An electric railway company has equipped a motorcycle with a side frame and third wheel, similar to a side-car, by means of which it transports a complete gas welding outfit to the job. It is claimed that this equipment eliminates the necessity of a truck, or special trolley car, and cuts the operating costs in half.

Recommends Regular Inspection of Electric Locomotives

While chief electrician at the Leadville Plant of the American Smelting & Refining Company I had all electric locomotives inspected over the pit each week. As a result of a six months trial, winding costs were cut about 300 per cent. Most of the trouble was caused from bearings, the locomotives being of a type that it was impossible to inspect thoroughly except over the pit. With a dependable man doing the inspecting and watching armature clearance very closely it is possible to effect worth while economies.

W. C. MAY,

Haybro, Colorado.

Shop Production Is Influenced by Tightness of Belts

The tightness of belt has a direct bearing upon the efficiency of production of any machine or apparatus on which they are employed. The application of the proper kind, width and thickness of belts for varying applications is a matter which demands detailed study. But no belt, however properly designed, will function satisfactorily unless it is maintained at the tension necessary to secure adhesion both to the driving and driven pulleys. In order to effect such adhesion belt tighteners are resorted to. Such belt tighteners should be given equal attention to the belt itself.

A belt tightener, to function properly, should be so designed that it will maintain nearly the same tension on the slack side of the belt under all loads. Others should really be called adjustable idlers, for if the pulley remains in a fixed position and a heavier load comes on, the pulling side of the belt will stretch and the slack side will become more slack, which will allow it to drop away from the tightener pulley. This will relieve the tension on the belt just at the time when it should have more tension, and it will slip and have a tendency to run off. A crown-faced pulley has nothing to do with the belt running to one side, for if a tightener pulley leads a belt to one side at all, it will run in nearly the same position under all loads.

Any idler pulley may be made to lead a belt a little to either side by simply throwing the idler out of line with the center line of the belt. Imagine a belt standing still and a pulley being rolled along on it. If it is in line with the belt it will stay on, but if it be turned a little to one side it will run off. Suppose the belt moves and the pulley is held in one place but turned a little to one side, as before. It is evident that the pulley cannot

run to one side, therefore it will exert a pull on the belt in the opposite direction, which will tend to run it to one side until the force exerted is counteracted by the pull of the crowned faces of the drive and driven pulleys tending to hold the belt on, in which position it will remain.

The type of tightener is unimportant so long as it is allowed to play freely and maintain an even tension on the belt; but a swing tightener—that is, a rigidly built frame lying parallel to the belt and hinged at one end of a support, the other end carrying the pulley—is preferable as it is of simple construction, plays more freely and is easier of adjustment for leading the belt.

It seems to be the universal practice to set the tightener pulley as close as possible to the driven pulley. The reason generally given, outside of it being customary, is that it gives the belt a greater arc of contact on the small pulley. With the tightener placed close to the driven pulley, an increase of load will stretch the pulling side of the belt and the extra slack will run off at the driver first. This slack having nearly the full length of the slack side of the belt, before it reaches the tightener the belt will start flapping and the tightener will play up and down. When the tightener rises quickly, it may be carried too far by its momentum, with a resultant release of the tension on the belt, allowing it to slip. With a belt running at high speed excessive flapping will often entrap a little air between the belt and the pulley face, which will greatly reduce the contact area. When the tightener is close to the driver, it will take care of the slack the instant it runs off the driver, and the belt and tightener will run much more smoothly, which will more than offset the advantage of the extra arc of contact obtained by the former method.

Cardboard Cartons Effect Economies in Tile Shipments

Transportation of any fragile commodity is attended by certain problems due to economic loss through damage in transit. This loss must balance the cost of protection against such injury.

Mechanical protection by crating or boxing is becoming more expensive because of a shortage of cheap shoo material. Methods which enable a given amount of raw lumber to go further offer some relief, but in recent years the substitution of paper or cardboard cartons is increasing. The use of cardboard cartons is permitting fragile building material to enter markets more and more remote from point of manufacture and at the same time reduce the expense due to breakage and the resulting delays in construction.

Recently the Los Angeles Brick Company placed an order with a western manufacturer for 900,000 cardboard cartons to enclose enamel and ornamental tile products for delivery to distant points. The cost of packing is more than offset by the economy that results from reduced breakage in transit.

Successful transportation of fragile material when unit weights are ex-

tremely heavy, depends largely on keeping the individual package small enough for freight loaders, truckers and others to handle with ordinary care. This is impossible when packages are large, and impracticable when stacked in bulk with straw filling as the only protection.

This is in line with the experiences of the electrical manufacturers in the handling of glassware referred to in the August 15th issue of the Journal of Electricity and Western Industry.

Effective Planning Increases Production

A modern view is to consider costs as results to be attained, planning deliberately to arrange machinery, personnel and wages in advance so as to produce the desired result; and advanced thought in management is moving steadily in this direction. Careful consideration will make it clear that wastes such as lost time, material wastes, losses due to broken machinery, etc., can be greatly lessened by careful planning and foresight. The planning department, which aims to accomplish these results, is now a common feature of modern plants and many enterprises that produce complex and refined products are now running on schedules prepared in advance that cover the entire range of operations in which all time elements and all ways and means are predicted in advance of production. Undoubtedly the remedy for much industrial waste lies in managerial changes of this kind.

It will be clear, for instance, that if the amount and quality of material for a given piece of work are determined in advance and provision is made so that only this amount of material can be drawn for this purpose, much of the material waste now so common in many plants would disappear. The case of plant supplies is equally clear. Every manager knows that when workmen are free to help themselves freely to oil, brooms and similar material the tendency to waste the supplies is almost irresistible. Many careful managers now determine in advance just what the needs of each man may be and arrange a budget for all supplies, thus preventing unnecessary waste. Departmental expenses can be budgeted in a similar manner. It will be noted that aside from the actual savings thus attained, such methods tend to stabilize the costs, making prediction much more definite.

These means of increasing production were recently emphasized by Dexter S. Kimball in an article in Chemical and Metallurgical Engineering.

The American Wood Preservers' Association has established a Service Bureau at 1146 Otis Bldg., Chicago, Ill. The object of the Bureau is to provide a service of direct benefit to all users of wood—lumbermen, engineers, farmers, the wood preservation industry and any one interested in the conservation of the forest resources of the country. P. R. Hicks is secretary-manager and he will be glad to answer inquiries regarding the treatment of wood and the use of treated timber.

Western Dealer, Jobber and Agent

Business building suggestions for the store—
Distribution and warehousing methods—
Advertising and sales promotion ideas

Quality vs. Price as the Basis For Making Sales

BY W. D. MORIARTY
Field Representative
Northwest Electric Service League

The curbstone evil is primarily due to the vicious practice among legitimate contractor-dealers of selling on price. It is true that with clearly marked specifications, two competent and thoroughly honest contractors will put in work which in its major particulars will be essentially the same. It is not quibbling, however, to say that no two contractors will do the same job of wiring in exactly the same way, and it is bad salesmanship and bad buy-manship to make any such assumption.

The better class of contractors do try to sell their work on quality rather than on price; but too many of them are too easily discouraged. Of course it is disappointing to have a customer tell you that your bid was \$1.00 too high, and of course the customer is stupid indeed if he allows a small difference in price to make him give his work to one contractor when he really prefers another. More important still, however, is the fact that the ordinary customer will not do it if he has been really and fully sold either on the superior quality of one man's work or on his entire reliability.

Build yourself a reputation and sell it so hard that it will grow better with every bid you submit. It is not true that all the average customer can be made to see is the price. Of course if contractors talk price, price, and help the customer believe the only test of quality is whether work will pass inspection, the customer tends to stress price rather than quality. But this is not wholly the fault of the customer.

In part the foolish trust which the customer puts in inspection is responsible for his tendency to buy the price rather than quality; and he must be educated. He must be taught that inspection takes as its standard the lowest allowable quality with respect to just one standard—that of safety. He must be taught that even as respects safety, it is the character of the man rather than inspection which is his best guarantee that the work is all that it should be.

Such education can be accomplished in one interview but if legitimate contractors will talk quality, quality, instead of price, price, and practice it as well as preach it, the customer will almost necessarily grow to regard the quality of his electrical work as of greater importance than price. And thus the contractor will eliminate, at least with a properly educated public, the competition of any curbstoner who has no established reputation.

Convenience Outlet Idea Not Yet Completely Sold

Practical Suggestions From Utah as to How the Home Electric Idea Can Be Made to Bring Tangible Results

BY EARL T. MILLHAM

It is somewhat surprising to note the apparent lack of interest the public in general is taking in connection with selling of the convenience outlet. There are very few that are being sold on the idea, compared to the large number of new homes that are being built in all sections of the country.

The Electrical Home has and will play a big part in helping to put over the preliminary educational thought and results will be gratifying from these public displays. But it must be fully appreciated by everyone in the industry that this feature alone cannot and will not bring home the desired results. The home merely opens the pathway to future efforts. Therefore we have all got a considerable amount of individual work to do in order to sell more thoroughly the idea to the public.

There are thousands and thousands of new homes that are being built every day and not a single outlet is being specified in the plans and specifications, and also we must realize the opportunity of the enormous shortage of homes still existing all over the country. As an example of this latter feature, it will be interesting to compare the number of marriage licences to the building permits that are issued during any given period for new homes. This will give us a very good idea of the future possibilities for the "convenience outlet".

I believe most everyone will agree that this little "silent servant" is a little more difficult to sell than the electric iron or washer was when they were first offered to the public. The reason for this is very easy to grasp. Its because the idea must be sold first.

And the most aggressive educational campaigns will be of material assistance in selling the idea.

It has been found from experience that a direct by mail campaign consisting of a series of letters, each containing good educational propaganda sent out about one month previous to the opening of the electrical home, is of considerable assistance. Then continue the campaign for two weeks after the home has been closed to the public. This will be a further benefit and will allow those connected with the home to get a check as to the immediate results that are accomplished due to this form of putting over the story.

In making a very careful survey of our own conditions, I have concluded that our original efforts must be directed to the building contractor. He is doing the designing and building of the class of homes that we must reach with our story. If we direct our efforts in this channel, the volume will be far greater than if we spend our time and money on the architect.

A good plan of procedure in reaching the building contractor is to solicit a list of these men from the local lumber or plumbing concerns. This will allow direct contact with each one of them. Then arrange meetings with them where the selling of the idea takes place. This is not going to be an easy task and will require several meetings.

He is much harder to sell than the public. However, if we have once sold him our real work is done.

This article is written with the view of stimulating the efforts and to offer suggestions that might be of assistance in selling the convenience outlet.

Initialed Turtles Prove Effective Window Attraction

BY CHAS. A. GODDARD

The F. A. Clarke Co., Inc., 732 South Spring Street, Los Angeles, recently used a novel and attention-getting stunt in one of its display windows. The base of that window was covered with sand and a miniature tank with water and stones was placed in the center. Four small turtles were turned loose in the window after each had been painted on the back with a large white initial. The initials used were I, R, O and N. The purpose of the lettering was explained in the showcard used in connection with the stunt. It read:

The first person discovering these turtles in a row so that they spell the word

I-R-O-N

notify us immediately and you will be given an iron free.

This plan not only attracted considerable attention, but caused those who looked to linger for some time. The offer was perfectly safe as far as the store was concerned.

The excellent slogan adopted by the Tyler Electric Company, 3916 West Sixth St., Los Angeles, conveys in extremely well chosen language the full scope of the modern electrical contractor-dealer's service:

"We Light Your Nights and Lighten Your Days."



Even the window background can be taken out



The floor of each window is a platform which can be removed at will.

Merchandising Ideas That Bring Business to the Dealer

A New Berkeley Store Which Has Capitalized on the Woman's Trade Through Attractive Store and Window Arrangement

BY REY E. CHATFIELD

Executive Secretary
British Columbia Electrical Development Association

TWO THIRDS of all sales made in the average contractor-dealer's store are made to women. The wise contractor-dealer recognizes this fact and caters to this trade. To accommodate this type of business, a contractor-dealer's store should be as distinctive as a specialty shop dealing in women's wearing apparel. By this I do not mean that the store furnishings should show the effeminate touch of the exclusive women's shops, but that the convenience of women patrons should be considered in planning merchandise display.

Mr. Robert Oyler, proprietor of the Edison Electric Company of Berkeley, California, has recognized this in planning and arranging the fixtures and display features in his new store. Wall cases of eucalyptus are placed along the two walls of the store. A light gray stain is used in painting the shelves and back of these cases, against which coloring the bright polished surfaces of the various appliances displayed make a pleasing contrast. The upper shelving is enclosed with panel glass doors while the lower half of the cases forms lockers for the storage of surplus stock. The use of the glass doors on the upper shelves permits the attractive display of appliances, but at the same time the merchandise is protected from the tarnish which comes with exposure to the atmosphere. Needless to say, a bright new piece of merchandise is more readily salable than one which bears the finger marks and smudges that come from indiscriminate handling.

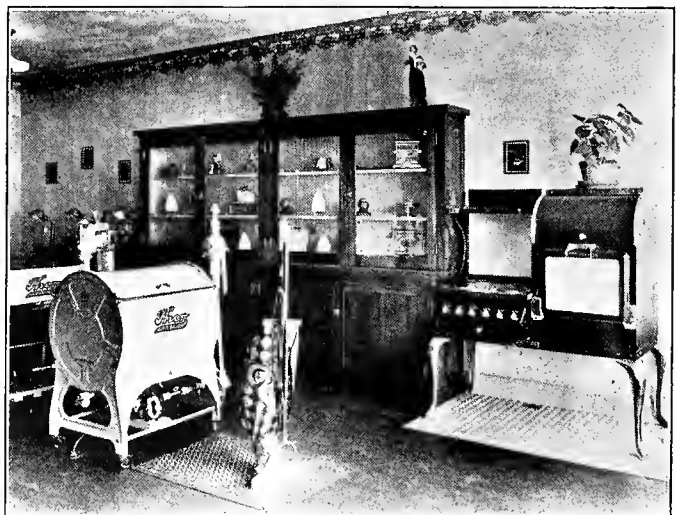
At the rear of the store, a small counter of eucalyptus wood, with the usual fixture for the display of lamps, adds rather than detracts from the general appearance of the store. Several convenience outlets are installed in this counter which serve the dual purpose of enabling the salesman to explain the operation of the various appliances and methods of attaching the cords, while at the same time he has an opportunity to explain the use of the outlet itself.

A small strip of linoleum under an electric range suggests the modern kitchen. A motor driven sewing machine on a small table suggests the use of the machine in the home. Similar touches enable the prospective purchaser to visualize the various important appliances in her own home.

Mr. Oyler in designing his show windows, has devised a novel form of construction. The floor of each window is a movable platform about eighteen inches in height, mounted on rollers so that the whole raised floor may be rolled out, exposing a cement floor on the street level which can be used as the floor for the display of washing machines, ironing machines and the like, the concrete floor suggesting the floor of the basement or laundry in the home.



Several convenience outlets are installed at the lamp counter



Eucalyptus finish throughout makes for attractive backgrounds

Why it is Worth While to Give Personal Service on Wiring

BY WALTER F. PRICE
Electrical Equipment Expert
California Electrical Cooperative Campaign

Did you ever stop and consider how much value there is in giving your wiring jobs your "Personal Service"? I do not mean that the electrical contractor should necessarily be the foreman on the job, but when the builder has the framework up and telephones to you that he is ready to have you figure his job, just take a few minutes away from your place of business and go out and see Mr. Builder yourself.

Go all over the job with him, let him know that you are there to give him your "Personal Service", suggest to him the addition of more convenience outlets here and there where he has never thought that they were necessary; remind him of previous jobs of his on which you went back and wired in extra "plugs" so that his clients could use their appliances and he could close the sale of the home, and how expensive it was to run them in afterward.

Never let the builder get the idea that your service is "so much an outlet" and then send out a wireman with a coil of wire and a brace and bit. Just as sure as he finds out that you are figuring his jobs by the outlet and he is not getting your "Personal Service", he will "go shopping" and perhaps find a contractor that will underbid you five cents an outlet. He tells his clients that his houses are distinctive, they have certain features that the other fellows' houses don't have, etc., so you must let him know that you are helping him make them distinctive. Make him realize by your suggestions for improvements that you have his interests at heart as well as your own. He gives the building his "Personal Service" and never fails to tell his clients about it, how well built it is, etc. Then why shouldn't you give your part of it your "Personal Service."

After your wireman has finished roughing it in, and before the laths are on, go around again, go over the job in detail with the builder before you turn it in for inspection. Be sure the builder is with you—don't go alone, and remind him that now the plumbing is in and he is about ready to put the laths on, this is his last chance to put in that convenience outlet in the back bedroom at a reasonable cost that he didn't think was necessary in the beginning, or that he thought he could "get by" without. Look the job over thoroughly, see that the outlet boxes are properly fastened and that the plumber hasn't jammed a sewer pipe up against any of your wires, perhaps some of the circuits need a little tightening where one of the mechanics pushed it out of line or up against the woodwork. That's "Personal Service"—and it will pay.

A clever electrical playlet entitled "Why Mr. Go Slow Made His an Electrical Home" was recently given at the Electrical Home Dinner given by the B. C. Electrical Cooperative Association to architects and building contractors of Vancouver.

Handling the Time Payment Sale on a Cash Basis

A New Development in the Financing of Installment Sales
Introduced by Affiliated Manufacturers

BY E. F. WHITEHEAD

It goes without saying that a dealer's ability to offer his customer the so called "Easy Payment" plan in the purchase of electrical appliances, particularly for the household, will stimulate sales. However, such a plan usually ties up for a long period of time, the capital that the dealer may need in the development of his other business.

Many financing plans have been offered by reputable concerns and are now in use by western dealers, but it is true that most of these have no special interest in the sale of electrical appliances, except as it might affect their ability to earn increased profits.

A new principle in financing has been established by the organization of The Pacific Coast Contract Purchase Company, with main office in San Francisco, which operates throughout the eleven coast states. It is a unit of a national organization and affiliated with the following group of electrical manufacturers:

General Electric Company
Edison Electric Appliance Company, Chicago
Electric Vacuum Cleaner Co., Inc., Cleveland
Hurley Machine Company, Chicago

Others may be added from time to time.

The primary object of the Pacific Coast Contract Purchase Corporation is to assist the dealer in financing the sale of products of these manufacturers and thereby to stimulate sales of these products with mutual profit to the dealer and manufacturer.

The Contract Purchase Corporation buys outright from the dealer, installment accounts arising from the sale of

the product of the affiliated manufacturers, on the basis of a discount from the face value, determined by the length of time necessary for the account to pay up in full. The discount is 10% plus a schedule graduated by months. The dealer acts as agent for the collection of installments as they mature, and when each one pays up in full, he receives a commission equal to 10% of the face of the account. Should an account pay out in advance of its terms, the commission will become immediately due and payable and the discount readjusted accordingly.

At no time, except in case of delinquency, does an outside organization appear in the transaction between the dealer and his customer, and the dealer has the advantage of keeping continuously in touch with his customer through the payment to him of monthly installments.

The working out of the plan illustrated by an actual sale would be as follows:

Cash sale price of washing machine	\$210.00
Add installment differential	14.30
Selling price on time payments	224.30
Deduct cash down payment	20.00
Balance due—face value of contract	204.30
Deduct discount 10 month 7% \$14.30	
Deduct col. compensation 10% 20.43	34.73
Amount paid dealer by purchase corp.	169.57
Amount recd. by dealer—first payment	20.00
Total amount received by dealer when sale has been made	189.57
When contract has been paid in full dealer received 10% collection compensation	20.43
Total proceeds from sale to dealer	210.00



Cooking School Proves Effective in Spreading the Electrical Idea at Salt Lake City

As a means of featuring the many uses of electricity in the household, and particularly the cooking and preparation of foods electrically, an annual cooking school is conducted by the Salt Lake Telegram. This year's event proved to be one of the most successful affairs of its kind that has ever been conducted in Salt Lake. Demonstrations and lectures were given daily by Miss Edith L. Clift, in the ball room of the Hotel Utah, in the art of cooking electrically, which were attended by large and interested audiences. One of the features of the cooking school was a baking contest, in which more than \$1500 in prizes were given away. Prior to Miss Clift's lecture each day an interesting talk was given by E. T. Millham, field secretary of the Rocky Mountain Electrical Cooperative

League, on the subjects of The Convenience Outlet and The Electrical Home. While the cooking school was decidedly electrical, many merchants and manufacturers of various products exhibited and demonstrated their goods. Booths were arranged by electrical firms and by these various merchants and manufacturers. The Rocky Mountain Electrical Cooperative League was also represented by a very attractive booth. The school was exceptionally well attended hundreds of housewives taking advantage of the opportunity to witness the demonstrations and listen to the lectures on the culinary art and the other interesting and instructive talks. Not only did these housewives add to their knowledge in the cooking line, but they also learned to appreciate electrical convenience.

Activities of the West

A Business Man's Department Devoted to Events and Developments in Western Industrial Centers—Including News of Interest to Readers in Public Utility, Industrial and Trade Fields

Colorado River Dam U. S. Project Says Secretary Fall

Secretary of the Interior A. B. Fall is in favor of the construction of the Boulder Canyon dam on the Colorado River by the Federal Government, according to advices just received in California from A. P. Davis, Chief of the U. S. Reclamation Service.

This significant declaration is the first authentic disclosure of the attitude of the secretary, who must pass on the project both as Secretary of the Interior and as a member of the Federal Power Commission. According to Davis, the secretary believes that no dam should be built on the Colorado River by any authority except the United States as the enterprise is altogether too large, too important and involves too many interstate and international problems to permit of its being undertaken by any other interests than the Federal Government. The communication from Davis further states: "The secretary thinks it is not desirable to permit any of the interests to contribute to the investigations but in view of the urgency of the matter has consented that all municipalities may be invited to do so for the present in order to keep the work going and forestall delay." The secretary has instructed Mr. Davis to prepare estimates in the amount of \$100,000 to further investigate the Boulder Canyon project. Contributions to this fund are to be solicited from the interested municipalities with the explicit agreement that such contributions do not involve any moral or legal advantage concerning the allocation of benefits from the completed project.

San Francisco Building Trades Strike is Settled

After nearly four months of comparative inactivity, construction work was resumed in San Francisco on August 29 following the official settlement of the building trades strike, involving between ten and fourteen thousand men. The unions voted to return to work under the American Plan of open shop.

Men who have watched the conflict predict that the settlement will be of great importance to San Francisco's industrial future. They outline the fruits of victory as follows:

1. The American Plan of open shop is firmly established in the City's largest single industry—the building trades.
2. The Industrial Association of San Francisco has come into existence as a permanent organization, pledged to the American Plan.
3. Public opinion in San Francisco has been stirred up to a realization of the evils of the closed shop, and the benefits of the American Plan.

4. The Buildings Trades Council of San Francisco having been the strongest labor combination in the West, the moral effect of the strike's outcome has been great among other union labor elements.

5. All rules restricting output have been abolished.

6. Union business agents and walking delegates are barred from going upon a job during working hours.

7. Foremen, being representatives of the employer, are not permitted to be union members.

8. Wages are reduced 7½% immediately, with the consideration of a further adjustment set for November 12.

It is the belief of bankers and business men in San Francisco that the establishment of the American Plan and the creation of the Industrial Association as a guardian of the American Plan, will result in bringing to that city, millions of dollars in new industries in the next few years.

Seattle Will Let Bids for Skagit River Hydroelectric Plant

Following the approval of plans and specifications for the construction of the Gorge Creek plant tunnel of the Skagit River hydroelectric project by the Seattle Board of Public Works recently, a call for bids on the construction of the tunnel was issued. The estimated cost is \$2,000,000. Bids will be opened by the board on September 30. The tunnel is to be 1100 feet long and is to be cut through solid rock.

On July 24, the city council of Seattle authorized the issuance of \$5,500,000 in bonds for the construction of the Gorge Creek plant, the first unit of which will be rated at 50,000. This appropriation will cover the cost of the necessary sub-stations and transmission lines between Seattle and the Gorge Creek plant. The contractor who secures the award for the construction of the tunnel or any part of the Gorge Creek project will be reimbursed by the city with non-interest bearing warrants, drawn upon the municipal light extension bond 1921 fund.

The Central Bureau of San Francisco Organizations has issued a preliminary notice for the California Industries Exposition, which it is expected will be held in the Exposition Auditorium, San Francisco, about November 15 to December 10, 1921. The California Industries Exposition will be conducted in the interests of the exhibitors and for the welfare development particularly of the San Francisco Bay section. The charges to exhibitors and for admission will be fixed as low as possible and any surplus devoted to the furtherance of future expositions.

The choicest space in the auditorium has been allocated to the San Francisco Electrical Development League which intends to enter at least 100 exhibits.

Los Angeles Accedes Regulation of Colorado River Development

Officials of the city of Los Angeles and of its Bureau of Power and Light have accepted the principles of regulation and taxation by the state of Nevada on the city's service and properties in that state, providing that city is permitted to develop power on the Colorado River at the Boulder Canyon damsite. In a conference between Los Angeles and Nevada officials the general problem of the Colorado River development was entered into, but no definite conclusions were reached. The Los Angeles officials expressed a willingness to allot 100,000 hp. to Nevada, and to submit to taxation and to accept regulation of rates and service on power sold in Nevada. As the arrangements with the reclamation service are still tentative, it will require further conferences which will include the reclamation service officials to determine the attitude of the state of Nevada it is said. The Nevada officials state that their position is one in which their state will insist on its share in the benefits of the proposed development.

The Alaska Steamship Company vessel "Kennecott", recently broke all economy records on a run from Seattle to New York and return. Technical experts have pronounced the run of the vessel as epochal in shipping history. Equipped with twin 1200 horsepower Diesel engines, the vessel showed a saving in the fuel bill of approximately \$10,000 as compared to an oil-burning steamship of the same cargo capacity. During the voyage the ship averaged from 10.6 to 11.2 knots per hour.

Cooperative Campaign Plans for Coming Year Outlined

Suggestions for future activities in the California Electrical Campaign were proposed at the recent meeting of the advisory committee of the campaign held in San Francisco. Some of the outstanding suggestions made at the meeting follow:

1. That the excellent field work being done in Southern California among contractor-dealers be extended to other districts of the state.
2. That as much money or more than was set aside last year for financing the campaign, be forthcoming this year.
3. That continued emphasis be made on contractor-dealers both association and non-association members, to forward the electrical convenience outlet use in the home.
4. That emphasis be placed on industrial work in schools, colleges and universities in behalf of the further use of electricity in the home and in industry.
5. That prizes be offered to the contractor-dealer who makes the greatest increase in the installation of electrical convenience outlets.

San Francisco Development League Urges New Amendment

Emphasizing the fact that the electrical industry can no longer stand by and see certain phases of electrical development taking place in California without proper unified regulatory control, the San Francisco Electrical Development League, through its Public Policy Committee, and by unanimous vote of the League itself on August 29, has gone on record as favoring an amendment to the state constitution making unlawful municipal appropriation of privately owned power plants. The resolution urging the action follows:

"WHEREAS, the attention has been called to the membership of the San Francisco Electrical Development League—an organization composed of six hundred and fifty men of the electrical industry in and about the San Francisco Bay region, concerning the appropriation of one of the power plants of the Southern Sierras Power Company by the City of Los Angeles

AND WHEREAS, we recognize that if this procedure is upheld by the courts of final decision in this State, a dangerous situation will arise wherein the cities of the State may acquire an undue advantage over rural districts in the supply of water, power and other necessities

THEREFORE, BE IT RESOLVED that this League go on record as favoring a constitutional amendment that will in the future make such appropriations unlawful.

AND FURTHERMORE, BE IT RESOLVED that this League go on record as favoring the bringing of municipally operated power plants under the jurisdiction of the California Railroad Commission.

AND FURTHERMORE, BE IT RESOLVED that this League do everything within its power to call the attention of other civic bodies to the importance of this action, particularly the San Francisco Chamber of Commerce, and to see to it that definite positive action be taken toward bringing about these constitutional amendments."

Electrically Driven Lumber Mill at Scotia, California

At Scotia, Cal., along the northern coast of the state, has been installed a large redwood lumber mill, electrically driven throughout. The mill is owned by the Pacific Lumber Company and the new installation is one of the most completely electrically controlled thus far produced; in fact, this installation is practically a push button control throughout. Tests are now being made by a number of electrical engineers in study of the economic savings that have been instituted by this progressive company, and the results will be followed with great interest throughout the West.

Legal Action Retards Los Angeles Harbor Improvement

The city of Los Angeles has been made party to a suit, brought by Herbert Peery to prevent the contemplated sale of the balance of the 1914 electric bonds, and attacking the recent sale of \$13,500,000 power bonds, because the elections authorizing the issues, specified bonds bearing 4½ per cent interest in the first instance, and 5 per cent on the power bonds. Recently the city sold the power bonds, at such discounts as to cause them to bear nearly 6 per cent interest and agreed to withhold any other issues contemplated, until 90 days after delivery of power bonds.

This action has blocked for the present the sale of \$1,250,000 harbor improvement bonds which were to finance the city's part of a joint construction program involving the Salt Lake Railroad and the U. S. Government, and much of the city work must be done, before either the railroad or the government can proceed with their part.

There is a growing sentiment that the recent hasty action of the city council should be set aside by the courts, paving the way for a new sale, at reasonable price and not complicating any other needed improvement now under way or contemplated.

New Development League Organized in Puget Sound Region

The Electrical Development League of Whatcom and Skagit Counties, Washington, was officially organized August 8, when by-laws were adopted and the following permanent officers elected: chairman, A. S. Clark, Clark Electric Company, Bellingham; vice-chairman, C. H. Ricker, Mt. Vernon; secretary - treasurer, C. H. George, Puget Sound Power and Light Company Bellingham. The membership of the league consists of those interested or engaged in electrical development in the northwestern part of Washington.

The objects of the league are the development of the electrical industry, the promotion of harmonious relations between the contractor-dealer, the central stations and the jobbers, and the furthering of the work of the Northwest Electrical Service League and the state contractor-dealers' association. Future plans will include educational campaigns for a more extended use of electrical appliances and modern wiring, and the installation of a "Home Electrical" as soon as arrangements can be made.

Highway Construction Gives Relief to California Unemployed

Highway construction work is doing much to relieve the unemployment situation in California according to a report recently issued by the State Highway Commission which shows that approximately 2500 men are employed on highway construction and contract work in that state.

The recent sale of \$4,780,000 worth of highway bonds will enable the commission to let more contracts in accordance with the \$40,000,000 construction program now under way. Work for many more men will be afforded as soon as building activities are under way. Bond market conditions during 1919 and 1920 has considerably delayed the program but since January 1, 1921 sixty-three contracts representing the expenditure of \$7,916,000 have been let.

In addition to letting these contracts for the construction of new highway links, the commission has spent \$1,358,000 for maintenance of highways since the first of the year.

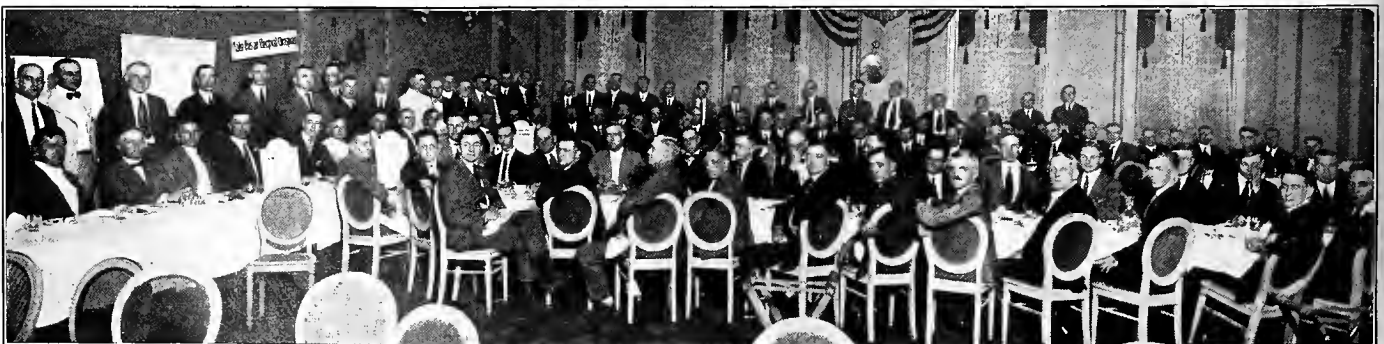
Denver Cooperative League Holds Big Picnic and Outing

Nearly a thousand members of the electrical industry and their families attended the first outing and picnic of the Denver Electrical Cooperative League held on August 25 at Elitch's Gardens, one of Denver's suburban amusement resorts. The outing took the form of an old fashioned basket picnic, with a baseball game, races, dancing and many novelty events.

All of the jobbers and manufacturers and many of the contractor-dealers declared a half holiday, sending their employes to the picnic. The central stations likewise arranged for the attendance of as many of their employes as possible.

T. O. Kennedy, general superintendent of the Denver Gas and Electric Light Company, and chairman of the League's advisory committee, was judge of the various events. Nearly every electrical firm in Denver contributed one or more prizes. After the athletic and dancing events were staged, a drawing was held and twenty additional prizes were distributed.

According to O. S. More, chairman of the general picnic committee, the success of the affair warrants immediate plans for a bigger and better picnic next year.



The launching of an extensive cooperative advertising campaign and the adoption of a code of ethics in the merchandising of electrical equipment were the features of this "Roundup" held by the Denver Electrical Cooperative League in honor of Laurence W. Davis of the National Association of Electrical Contractors and Dealers on August 30.

Electric Sign Advertises 1925 Portland Exposition

Portland is beginning to "Tell the World" of the Atlantic-Pacific Highways and Electrical Exposition to be held in that city in 1925. The first electric sign to appear in Portland was installed by the Liberty Theater on the front of its building where it is seen by the thousands who traverse Broadway by day and by night. The signing of a bill recently by President Harding giving government indorsement to the exposition and inviting foreign nations to participate has given impetus to the undertaking and plans are progressing rapidly.

A body of engineers of all branches under the auspices of the Oregon Technical Council is acting as an advisory committee to the fair sites committee, and has sent out questionnaires to be



Electric sign placed on the top of the Liberty Theater in Portland to advertise the 1925 Exposition in that city.

filled out by the parties interested in the various sites and upon return of these will make recommendations to the sites committee.

The exposition will be primarily an electrical exposition and the board of directors plan to make it symbolic of "the electrical age."

California Company is Extending Substation Facilities

In addition to general construction activity throughout its territory, the Pacific Gas & Electric Company is preparing to meet the additional supply of electrical energy that will be fed into its system from the plants on the Pit River by increasing the equipment in several of its most important California sub-stations. Included in the added development are the following:

At Artois, north of Willows in the rice district, a modern switching equipment is being installed and the capacity of the sub-station increased from 15,000 to 45,000 kw. at a cost of \$30,000.

At Wilkins Slough between Knights Landing and Colusa on the Sacramento River, a new sub-station is to be erected with an increase of capacity from 1800 to 3000 kw. The cost will be \$45,000.

Five 60,000 volt outdoor oil switches are to be installed on the transmission line between Cottonwood and Colusa at a cost of \$15,000.

At Williams in Colusa county a new sub-station is in the course of construction with a rated capacity of

15,000 kw. The estimated cost is placed at \$33,000.

The company is building a new sub-station at Roseville with a capacity of 2250 volts at a cost of \$28,000.

A new sub-station has just been completed at Woodbridge between Sacramento and Stockton at a cost of \$17,000. The capacity will be 600 kw. Another sub-station is being erected at Nicholas the capacity of which will be 15,000 kw. and the cost \$15,000.

California State Fair Exhibits Latest Farm Machinery

"Power on the Farm" was forcibly brought to the thousands of visitors at the State Fair at Sacramento during the week of September 3 to 11 by the exhibit of power machines in the large tent given over to this branch of farm display. Tractors, pumps, motors and machinery of all kinds were to be seen there and the farmers were given a clear indication of what machinery could do to lighten both his physical and financial burden.

State Fair officials estimated that an average of 40,000 people visited the exhibit daily.

A total of 11,000 square feet was filled by the exhibit of pumps, which included several complete pumping plants, with the latest electrical appliances. The big concrete pump in the center of the exhibit was a maze of streams of water.

Several farm electric lighting plants drew much attention. The University Agricultural Engineering Division had a staff of experts delivering lectures in conjunction with the exhibits throughout the major portion of each day.

Washington Coast Utilities Buys Wenatchee Properties

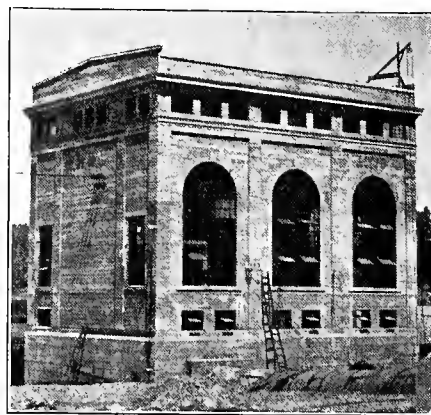
The Washington Coast Utilities, owners and operators of various small electric power plants in the Puget Sound district, recently acquired the properties of the Wenatchee Valley Gas and Electric Company at a receiver's sale. The consideration has not been made public. The Wenatchee properties include small plants at Entiat, Dryden and Chelan Falls, Wash., the combined capacity of the three being rated at approximately 3000 kw. In addition the company owned a small steam auxiliary plant at Wenatchee. Current for the operation of the existing plants taken over by the Washington Coast Utilities Company will be supplied by the Puget Sound Power and Light Company. The arrangement was concluded prior to the purchase of the Wenatchee properties by the Washington Coast Utilities Company and was the result of an agreement with the Puget Sound Light and Power Company to make no effort to purchase the property provided the power to operate the plants was purchased from them.

The abandonment of its interurban service to the towns of Cheney and Medical Lake from Spokane, Washington, is threatened by the Washington Water Power Company to take effect March 1, 1922, unless in the meantime traffic has picked up sufficiently to justify its continuance.

First Unit of Pit River Project is Placed in Service

The first unit of the Pit River development of the Pacific Gas & Electric Company has been placed in operation. The unit is the 12,500 kw. Hat Creek No. 1 station, transmission lines to which were opened August 22. Hat Creek No. 2 station, will be similar to No. 1 and will be completed some time this month.

Under present plans the output of No. 1 station will be transmitted at 6600 volts to the No. 2 station, where the combined output of both plants will be stepped up to 63,000 volts and transmitted to Cottonwood substation, where it is to be delivered to the reconstructed lines of the former Northern California Power Company for transmission further south.



Hat Creek No. 1 station, the first unit of the Pit River development of the Pacific Gas & Electric Company to be placed into service.

1,000,000 Volts For First Time at Commercial Frequency

Generation and transmission of electric power at more than 1,000,000 volts at commercial frequencies has been successfully accomplished at the high voltage engineering laboratory of the General Electric Company at Pittsfield.

Valuable data was collected during the experiments indicating the feasibility of considerably higher transmission voltages for commercial purposes.

Physical laws applying to high voltage phenomena were found to hold good at these enormous potentials. Arc-over tests were conducted on strings of standard ten-inch insulators up to 1,100,000 volts and at the same time the laws of corona were proved to hold. Results indicated that a transmission line using four-inch diameter cables or larger would carry the voltage.

The Montana Power Company recently purchased the plant and power lines of the Deer Lodge Electric Company according to advices from Butte. In taking over the smaller concern officials of the company announce that they will be able to furnish more efficient service to the Deer Lodge consumers on account of the statewide system operated by them. It is understood that the company has secured a number of the available power sites on the Kootenai River and is planning to erect a new plant in that district.

San Francisco Engineers Hear Talk on Highway Tests

Explanations of the construction and descriptions of the tests which are being conducted on the reinforced concrete highway at Pittsburg, California, were given by Lloyd Aldrich, engineer in charge, and J. B. Leonard his associate, at a luncheon at the San Francisco Engineers' Club on September 7. Motion pictures were used to illustrate the address.

The test highway has been constructed under the direction of the Columbia Steel Company in the interest of the "good roads" campaign. It has been built in the shape of a race track and is 1371 feet long. It is to be tested until destroyed by motor truck traffic. The road has been built entirely on adobe and thirteen types of highway are included in the big loop. The types are the result of conferences between leading federal, state and county highway engineers. Four tunnels have been constructed under various sections to observe the results of the heavy traffic on the under surface.

The tests, which are under way at the present time are drawing attention from all parts of the country and information will be bulletined as rapidly as the tests are completed.

Service League to Hold Electrical Exhibition in Tacoma

During the closing week of September or the first week of October an electrical exhibition of proportions never before attempted in the Northwest is to be shown in Tacoma, Washington. The exhibition, which will run five days, will be held in the new warehouse of the Tacoma Municipal Light and Water Department, now nearing completion. It will be held under the auspices of the Northwest Electrical Service League and will be directly supervised by Stephen I. Miller, executive secretary of the league.

It is planned to utilize two entire floors and the roof of the building for the various exhibits. Manufacturers, jobbers merchandisers of electrical supplies and appliances, and corporations and individuals interested in the development of the electrical industry will be represented. As no electrical show of any kind is to be held in Seattle this season, the Tacoma show is expected to draw much interest. The committee in charge of the preliminary arrangements for the show includes Llewellyn Evans and B. A. Nichols of the Tacoma Municipal Lighting Department; M. G. Cushing and R. C. Saunders of the Puget Sound Light and Power Company; C. A. Young of the Electrical Construction Company; Frank Muellenbach of the North Coast Electrical Company and C. G. Stewart of the Northwest Supply Company.

Business conditions in Butte, Montana, are still quiet owing to the inactivity of the copper market. The Eastern Butte Mining Company is reported as stating that production costs for the first four months of 1921 average less than 12 cents a pound for over five million pounds of copper produced. This is almost 4 cents a pound less than the 1920 cost of production.

Pacific Jobbers Back Northwest Service League

Mt. Rainier Meeting of Pacific Coast Electric Supply Jobbers Take Action Supporting Northwest Cooperative Movement

One of the most successful meetings of the Pacific Division of the National Electric Supply Jobbers Association took place at Paradise Inn, Mt. Rainier National Park, Aug. 29-Sept. 1, 1921. The outstanding feature of the meeting proved to be the splendid manner in which the Jobbers' Association is standing squarely behind Stephen I. Miller, Executive Secretary of the Northwest Electric Service League. Dean Miller at the open session on Wednesday evening, Aug. 30, laid before the members the activities that have been initiated in the Northwest looking toward the betterment of the industry in that section of the West. Briefly, these consist of better accounting, betterment of advertising methods, helpfulness in financing of utilities and stress upon educational effort in every quarter for better business methods in the industry.

At the conclusion of Dean Miller's address, W. D. McDonough, Seattle manager of the Westinghouse Electric & Mfg. Co., who was chairman of the meeting, called upon Robert Sibley, editor of the Journal of Electricity and Western Industry, to summarize the outstanding features of the work in the Northwest as he saw it. Mr. Sibley stated that the emphasis Mr. Miller is placing upon education in the schools and in the industry along electrical lines combined with Mr. Miller's evident desire to put the industry as a whole to work to accomplish his ideal was bound to net magnificent results.

Albert H. Elliot, secretary of the Jobbers' Association, closed the meeting with a powerful address in which he pointed to the fact that meetings and conventions of men interested in great cooperative movements of the day must be constantly held in order to awaken the emotional side of the self-interest appeal, which through its humanizing influence is bound to bring concrete results in cooperative attainment.

Those in attendance at the meeting were:

In Attendance at the Quarterly Convention of the Pacific Division, National Electric Supply Jobbers' Association, Aug. 29-Sept. 1, 1921

P. J. Aaron, Seattle manager, Fobes Supply Co., Seattle
Earl Alexander and wife, Alexander & Laven-son, San Francisco
Floyd Averill and wife, general manager, Fobes Supply Co., Portland
H. L. Bargon, Montana Electric Supply Co., Butte
W. S. Berry, Pacific Coast sales manager, Western Electric Co., San Francisco

T. E. Bibbins, president, Pacific States Electric Co., San Francisco
C. R. Bach, Manhattan Electric Supply Co., San Francisco
Harry Byrne, North Coast Electric Co., Seattle
P. H. Booth and wife, Pacific Coast sales manager, Edison Electric Supply Co., Inc., Ontario
George Boring and wife, Portland manager, Pacific States Electric Co., Portland
Robert W. Clark, commercial dept., Puget Sound Light & Power Co., Seattle
J. I. Colwell and wife, Northwest manager, Western Electric Company, Seattle
W. M. Deming, president, Electrical Supply Co., Memphis
Albert H. Elliot and wife, Secretary, Pacific Division, Electric Supply Jobbers Association, San Francisco
F. A. Gerhardt, Crouse-Hinds Co., San Francisco
N. W. Graham, Graham-Reynolds Co., Los Angeles
S. B. Gregory, Arrow Electric Co., San Francisco
A. E. Griswold, A-G Mfg. Co., Seattle
C. B. Hall, Illinois Electric Co., Los Angeles
D. E. Harris, vice president and sales manager, Pacific States Electric Company, San Francisco
C. C. Hillis and wife, vice president and treasurer, Electric Appliance Company, San Francisco
J. A. Kahn, president, Capitol Electric Co., Salt Lake City
Jas. H. Kelly and wife, Western Electric Co., Tacoma
F. G. Larkin and wife, Garnett Young & Co., Seattle
Lewis A. Lewis, commercial manager, Washington Water Power Co., Spokane
Chas. Listenwalter, Listenwalter & Gough, Los Angeles
A. C. McMicken, sales manager, Portland Railway, Light & Power Co., Portland
W. D. McDonald and wife, Seattle manager, Westinghouse Electric & Mfg. Co., Seattle
C. O. Martin, Benjamin Electric Co., Seattle
H. J. Martin, National Carbon Co., Seattle
George Miles, Supply Dept., Westinghouse Electric & Mfg. Co., Seattle
A. R. Miller, National Carbon Co., Portland
Stephen I. Miller and wife, Northwest Electric Service League, Seattle
A. S. Moody, Portland manager, General Electric Company, Portland
M. M. Mossman, U. S. Steel Products Co., Seattle
C. A. Norton, Westinghouse Lamp Co., Seattle
R. F. Oakes, National Carbon Co., San Francisco
S. W. Peterson, Stubbs Electric Co., Portland
C. N. Sampson, U. S. Steel Products Co., Portland
H. E. Sanderson, Bryant Electric Co., San Francisco
R. C. Shipman, Allied Industries Co., Inc., Seattle
Robert Sibley, editor, Journal of Electricity and Western Industry, San Francisco
H. B. Squires, H. B. Squires Co., San Francisco
O. B. Stubbs, Stubbs Electric Co., Portland
Sam'l H. Taylor, Electric Railway & Manufacturers' Supply Co., San Francisco
Harry W. Turner, president, Montana Electric Supply Co., Butte
J. R. Wells, Fobes Supply Co., Seattle
C. M. Will, Fobes Supply Co., Portland
H. J. Woodward and wife, Fobes Supply Co., Seattle
Roy Worth and wife, Pacific States Electric Co., Seattle
H. F. Yost, Trumbull Electric Mfg. Co., San Francisco

The League of California Municipalities will hold its annual meeting at Santa Monica during the week of September 27. The league is the official organization representing all cities and towns in the State of California. Many important topics of municipal interest are scheduled for discussion during the convention week. Santa Monica is planning an elaborate program of entertainment for the municipal representatives.

The Northwest Electrical Service League held a banquet at the Washington Annex, Seattle, on September 9 for the purpose of promoting closer relationship between men interested in the electrical industry in Seattle. The banquet was attended by contractor-dealers, jobbers, building contractors, architects, central station operatives. The banquet was supervised by Stephen I. Miller, executive secretary of the league.

Idaho Contractor-Dealers Hold First Convention

Better organizations and plans for closer cooperation during the coming year were the chief themes of the first semi-annual convention of the Southern Idaho Association of Electrical Contractor-Dealers held in Boise September 4 and 5. Fifteen of the twenty-seven members of the association attended the sessions, which were presided over by Harvey Ball of Boise, head of the organization.

Chief interest of the convention centered in the addresses delivered by members of the association and special speakers who had been secured for the occasion. H. T. Plumb, engineer for the General Electric Company at Salt Lake City, Utah, spoke on "Looking Into the Future for Electrical Industries." Frank R. Venable, secretary of the Montana Association of Electrical Contractor-Dealers addressed the gathering on "Cooperation with the Architect." Two Salt Lake men, E. E. Brazier of the Capital Electric Company, and C. C. Campbell of the Intermountain Electric Company, were also among the speakers. Lawrence W. Davis of the National Association of Contractor-Dealers, New York City, gave the convention a powerful message of the work of the national organization.

The list of the entertainment features prepared for the visitors included a trip to the Arrow Rock Dam, the highest dam in the United States and the center of the Idaho Power Company's project. A banquet, a baseball game and a dancing party were also enjoyed by the delegates.

Pocatello was chosen as the next convention city of the association. The officers of the Southern Idaho Association are president, Harvey Ball, Boise; first vice-president, William Hopper, Boise; second vice-president, Walter Bauchman, Idaho Falls; third vice-president, William Bullock, Weiser; secretary-treasurer, Harry Dinkelacher, Twin Falls.

Raymond R. Frazier, president of the Washington Mutual Savings and Loan Association, addressed the Seattle Chapter of the American Association of Engineers on September 2. Loans and investments were the subjects discussed by Mr. Frazier. National Secretary C. E. Drayer of Chicago is scheduled to address the regular meeting of the association on September 16.

Forest Home, seventeen miles up in the mountains above Riverside, California, is to be the rendezvous for southern electrical merchandisers on September 17 and 18. The two days will be spent in business sessions, bonfires and hikes.

Rolla B. Watt, judge of the Justice Court, city and county of San Francisco, explained the workings of the small claims court under the law passed by the last state Legislature at a meeting of the San Francisco Development League held on September 12. Following the luncheon members of the league were taken aboard the newly commissioned battleship, "California" as guests of the officers.

Meetings of Interest to Western Men

Washington Association to Discuss Secession at Convention

Interest in the forthcoming convention of the Washington Association of Electrical Contractor-Dealers which will convene in Yakima September 16 and 17, is centering on the proposal to secede from the National Association, which will come up for discussion at that time. The proposal follows the action of the California and Oregon associations in severing their connections with the national organization.

The Washington association, under the leadership of Stephen I. Miller, executive manager of the Northwest Service League, is highly enthused over the new work ahead and is planning to develop closer relations between other western state associations.

Officials of the organization have stated that the Pacific Coast as a whole faces a banner year in the betterment of the contractor-dealer movement.

Seattle Section A. I. E. E. to Increase Membership

Concerning the plans for the Seattle Section of the American Institute of Electrical Engineers, George E. Quinan, chief electrical engineer for the Puget Sound Power and Light Company has the following to say:

"At the election of officers held on the third Tuesday in May, J. P. Growden was elected chairman of Seattle section and E. S. Code, secretary. Mr. Growden is electrical engineer on the Skagit project, working under C. F. Uhden. Mr. Code is in the Detail and Supply Department of the Westinghouse Company of Seattle.

The Executive Committee appointed by Mr. Growden is as follows: F. D. Nims, president, Washington Coast Utilities; W. D. Scott, electrical engineer, Pacific Telephone & Telegraph Co.; Willis T. Bachteller, electrical engineer, Seattle Municipal Lighting Dept.; G. E. Quinan; E. S. DesCamp of the Western Electric Co., Seattle, and E. S. Code. Mr. Growden is chairman of the Executive Committee. Mr. Scott is chairman of the Papers and Meetings Committee and Mr. DesCamp is chairman of the Membership Committee.

The first meeting under the direction of the new officers will be the 3rd Tuesday in September. In the meantime the Papers Committee is preparing a complete program for the year and expects to have this printed and ready for distribution at the September meeting.

The Pacific Coast Gas Association will meet for its twenty-eighth annual convention at Del Monte, California from September 20 to 23. An elaborate program under the classifications of the accounting, commercial and technical departments has been prepared for the event.

Executive Committee of N.E.L.A. Meets in New York City

Optimistic reports regarding the outlook for business throughout the country were made by representatives of all Geographic Divisions of the National Electric Light Association who attended a meeting of the National Executive Committee held at the Association headquarters in New York on September 1.

Without exception the committee members stated that the bottom of the business depression had apparently been reached and that almost every line of business was on the up grade. A gradual but steady improvement had been noticed by practically all companies whose lighting and commercial loads enable them to keep a close check upon business conditions.

Among the western representatives who attended the meeting were W. R. Putnam, Idaho Power Company, Boise; A. B. West, Southern Sierras Power Company, Riverside, California, and E. A. Phinney, Jefferson County Light and Power Company, Golden, Colorado.

The executive committee considered and approved budgets for administrative and general expenses and for the National Divisions and Geographic Divisions. Plans for activities for the coming year were brought out during the discussion of the budgets.

Portland A.I.E.E. Sees Movie on Iron and Steel Manufacture

A. J. Sheldon, metallurgist for the American Rolling Mill Company, addressed the Portland Section of the American Institute of Electrical Engineers at a special meeting held September 7 on recent developments in manufacturing processes for iron and steel. The talk was illustrated with a technical motion picture, a feature of which was the illustration of the recent achievements in the successful making of pictures of fusing metals within a furnace, a process hitherto considered impossible.

San Diego Electric Club with 60 active members is preparing to launch an active campaign to assist the power company in financing the construction necessary to keep up to the demand for electricity. A large delegation is to be sent to the Contractor-Dealer meeting at Riverside, Calif., Sept. 17, and the new executive officers with A. E. Hollowan as president, promise the most active year in San Diego's history. All branches of the electrical fraternity, including manufacture, distribution and utilization, are cooperating in an effort to break all records.

New officers for the coming year have been chosen by the board of trustees of the Associated Industries Association of Seattle as follows: president D. W. Bowen, Puget Sound Sheet Metal Works; first vice-president, Roy J. Kinnear, George Kinnear Company; second vice-president, Burr Fisher, Fisher Flour Milling Company; treasurer, Moritz Thomsen, Pacific Biscuit Company; executive secretary, Alfred Bickford.

J. G. Pomeroy, manufacturer's agent with headquarters in the San Fernando Building, Los Angeles, has leased a new warehouse at 336 Azusa St. in Los Angeles, which contains something like 10,000 sq. ft. Mr. Pomeroy has recently taken on the agency of the American Wiremold Company and has now on hand something over a carload of this material ready for distribution to customers.

F. L. Clark, a well known contractor dealer of Los Angeles, is opening up a new store on 7th and Broadway, one of the most prominent locations to be found in the city. The outcome of this expensive new location will be followed with great interest throughout the West.

E. A. Lynch, formerly manager of the Los Angeles Thor Electric Shop has resigned this position to go into business for himself.

Landers, Frary & Clark, manufacturers of the Universal line of electrical appliances, has announced the addition of four new table appliances to their Universal line. The most attractive of these is probably the percolating coffee urn of Grecian design. There is also a reversible toaster with an easily manipulated reversing mechanism; a grill combination, and a tilting kettle of Colonial design, which permits water to be poured without lifting from the stand.

The **Coast Equipment Company** of San Francisco has been appointed western representative of the Hopewell Insulation & Manufacturing Company, of Hopewell, Va.

The **Allis-Chalmers Mfg. Co.** of Milwaukee has issued a revised bulletin known as Publication No. 1106-A, describing their complete line of "Type E" direct current motors and generators.

The **Buzzell Electric Works** have taken over the representation of the **Rockwood Mfg. Co.**, manufacturers of paper pulleys.

The **Quaker Dishwasher Sales Company** of Philadelphia has recently put on the market a new type of electrically operated dishwasher. This new household appliance has some unusual features and is operated by a Westinghouse motor.

Automatic apparatus for the new Vernon substation of the Los Angeles Railway began arriving early in August. The installation of this converter equipment as well as that intended for the new substation at Garvanza will be ready for the heavier power demands next winter.

R. C. Shipman, manager of the Allied Industries, Inc., with headquarters in Seattle, Washington, was in attendance at the recent meeting of the Electrical Supply Jobbers Association in Mt. Ranier National Park. It will be recalled that Mr. Shipman had a constructive part in the installation of the original Big Creek Development of the Southern California Edison Company back in 1910-11.

The **Hurley Machine Co.** of Chicago, Ill., elected two additional vice-presidents at a recent meeting of the Board of Directors. These are Edward N. Hurley, Jr., and James A. McCoy. Mr. McCoy is secretary of the company and John Proudfoot has been elected treasurer.

Manufacturer, Dealer, and Jobber Activities

The **Nathan Dohrmann** establishment in San Francisco is still selling appliances by exhibiting the use of lamp sockets instead of the convenience outlet connection. Even though the present market is based on the use of the cluster for the attachment of the appliance the future market must be developed and contractor-dealers overlook a splendid opportunity of passing on this idea when they cling to the old way of doing things with little attention to what may be needed on the morrow.

The **Exeter Electric Company** is the name of a new firm of electrical contractors and dealers located at Exeter, California.

The **Federal Electric Company** of Chicago announces the production of a new model vacuum cleaner. Some of the new features are a dust bag of improved type, switch for starting and stopping motor, and silent chain drive for the revolving brush.

The **Steel City Electric Company** of Pittsburgh, Pa., has issued a new edition of their catalog No. 33. This catalog has eliminated certain outlet boxes and covers, in accordance with the recommendations of the Standardization Committee of the Associated Manufacturers of Electrical Supplies, which were previously included. A new line of octagon concrete outlet boxes has been added.

The **Knox Motors Associates** of Springfield, Mass., are manufacturing an electrically operated dishwasher which will be known to the trade as the "Cave" Dishwasher.

The **Wellman-Seaver-Morgan Co.** of Cleveland, Ohio, has issued two new bulletins, Nos. 64 and 65. Bulletin No. 64 is descriptive of the hydraulic turbine equipment of the San Francisco No. 2 Plant of the City of Los Angeles, Cal. Bulletin No. 65 is descriptive of the turbines for Niagara's high-head plant. These turbines are the largest ever built, having a capacity of 52,500 hp. with a net effective head of 305 ft.

J. G. Pomeroy has moved his office from the San Fernando Building to 336 Azusa St., Los Angeles, Cal., where he has opened a large warehouse and will carry in stock a complete line of the firms of which he is factory representative. These are, the Rome Wire Co., M. B. Austin & Co., American Wiremold Co., Edwards & Co., Federal Porcelain Co., McGill Mfg. Co., and the Columbia Metal Box Co.

The **General Basic Products Company**, formerly located at 2926 16th Ave. S. W., Seattle, finding it necessary to obtain more space and additional manufacturing facilities, recently took over the Woodruff-Boyce Seed Cleaning plant at 4716 East Marginal Way, Seattle. The new plant will give practically six times the capacity formerly used. The company manufactures albatross products, including kalsomine, cold water paint, dry putty for plaster boards, etc., and also handles a general line of building materials.

The **Chicago Flexible Shaft Co.**, of 5616 Roosevelt Road, Chicago, manufacturers of electric irons, have appointed **Hughson & Merton Co.** of Denver, Los Angeles, Portland and San Francisco as their western representatives.

Barde Industrial Corporation, Seattle, formerly located at 24 W. Connecticut Street has moved its office, warehouse, and storage yards to 2717 1st Avenue So. Seattle, where new buildings have been erected.

The **F. E. Newbery Electric Company** has leased, through the agency of Wolfe & Co., the store and basement premises at 359 Sutter Street, San Francisco, between Grant Avenue and Stockton Street, which are at present occupied by the H. Taylor Curtis Company.

Rushton Bros. of Vancouver have removed their place of business from 615 Pender Street, West to 433 Richards Street. The new location is more centrally located and more commodious than the old quarters.

W. W. Fraser, electrical contractor of the city of Vancouver, has been awarded the contract for the Williams-head Bridge on Vancouver Island. This is one of the largest contracts let this past two months and covers both the mechanical and electrical installation.

C. D. Seaver, a prominent resident of Roseville, Cal., has just completed a magnificent residence in that city. Among the electrical features of his home will be found Wesix hotwater heaters, two Wesix electrical fireplaces and an electric range.

H. J. Gute & Company, western distributors, with offices at 150 Post Street, San Francisco, have taken over the representation of the Century Manufacturing Company of Elizabethtown, Pa. This company manufactures a line of toasters and other small heating specialties.



And here is Percy Booth, Pacific Coast sales manager of the Edison Electric Appliance Company, with coat off, with smile and pleasant demeanor, due to the nearby presence of "Jack" Frost of the Southern California Edison Company. At any rate, Percy does have his coat off at times and the pencils seen in his upper vest pocket are good equally for taking orders as well as checking up the golf score.

Business Outlook in Western Market Centers

Reflecting the Trend of Community Thought on Conditions and Events Affecting Business and Industrial Activities Throughout the West

Compiled and edited for the Journal of Electricity and Western Industry by correspondents in all principal Western cities.

SAN FRANCISCO

The building tie-up now appears to be definitely settled. Although all the crafts are not fully employed due principally to a scarcity of materials, the general situation is considered satisfactory. Prevailing wage scales are about seven and one half per cent lower than before the strike. Estimate of the total amount of construction now under way in San Francisco alone are placed at \$20,000,000.

General financial conditions remain unchanged. Stability is conceded to be the most desired end. The gradual increase in collections indicates an improvement in business and nearly complete liquidation.

A stimulus to industrial activities is expected to follow the forthcoming industrial exposition which will open in the Municipal Auditorium about November 15 and continue for nearly a month.

The fall season has heretofore been a period of increased business in the bay cities and jobbers and retailers are confident that this season will meet all expectations. It is not expected that the total volume will reach that of either of the last two years but that it will be at least 90 per cent of the pre-war normal.

DENVER

Business in all lines in Denver and other parts of Colorado is reviving steadily and with every indication of continuing so until it is again back to normal. At the present time reports from all parts of the state show an optimistic trend, and some actual betterment in conditions over the depression of a few months ago. The banks report more deposits, with the money market getting easier, while merchants note an increase in business, especially for the necessities.

Colorado's wheat crop for 1921 will exceed by 7,000,000 bushels any previous year's production, according to estimates by the state agricultural department and will reach 30,000,000 bushels. With this increase, it is expected that Colorado will step from twelfth position of last year to sixth or seventh place among the wheat producing states. At the present prices this crop will hold first place among the state's yields. Record crops in other farm products such as hay, potatoes, corn, sugar beets and fruits are also anticipated. This month the sugar beet factories will open and work for a large percentage of Colorado's unemployed will be found.

Reports from lumber and building material men in Denver and other parts of the state are to the effect that build-

ing in Colorado is getting well under way with the outlook ahead bright. This will mean more employment for men engaged in the building trades.

SPOKANE

Optimism is the keynote of the business outlook at the present moment. Electrical jobbers report a picking up in orders and a slight improvement in collections. Stocks are ample in view of the demand that has prevailed and deliveries prompt. The last week of August was ideal for threshing throughout the eastern counties of the state. Results show the anticipated fine yield for winter wheat. Spring wheat is not so good, the yields ranging from fair to poor. Where the threshing is finished, wheat is already pouring into the warehouses and the liquidation movement counted on by the bankers to start the new year off on a firm foundation, is satisfactorily started.

Nearly 100 more building permits were issued in Spokane in August than in the same month of 1920. The aggregate value, however, fell \$38,000 below that of August 1920. This is significant of the fact that most building now is that of homes.

The lumber industry continues stagnant with many mills already closing down this early in the season. Yards are filled with lumber, in many cases, mills closing down because of lack of further storage capacity. Lumbermen, generally, however, look forward with confidence to a gradual resumption of business.

SALT LAKE CITY

As a result of the marketing of large quantities of farm produce and live stock by the farmers, the financial situation particularly in the agricultural districts has eased somewhat. The sugar companies will start their fall campaign of sugar making within the next thirty days, with an excellent crop of beets. The heavy yield this year will afford relief to the unemployment problem. The demand for harvest hands has already partially taken care of many workers while increased activity in the railroads has also afforded relief.

Building operations continue at a fair rate in most localities. In Salt Lake City, building was three times heavier in August than during the same month last year.

The local hardware trade reports business as slow, with a marked improvement in collections. The lumber dealers report a fair volume of business. In general, the business outlook for the inter-mountain district is decidedly encouraging, despite the fact that it is far from normal.

LOS ANGELES

Business attention is divided between building activities and industrial expansion. Foundry and machinery plants are growing out of all proportion to last year, and electricity is playing an ever increasing part in this growth. An electric furnace with a capacity of 60 tons in 24 hours was just started by one company due to 50 per cent increase in their business during the last three months. Similar concerns reflect much of the same activity.

Contractor-dealers and jobbers are still feeling the good effects of the house building records, 3600 permits for wiring were taken out last month. This is 20 per cent above the normal.

With the \$70,000,000 building record of the year which ended June 30, it seems quite plausible that decreased unit prices will make 10 to 15 per cent more work with the same cost during the coming year.

SEATTLE

The continued re-opening of logging camps and lumber mills throughout the Puget Sound district due to increased orders, and the resumption of coal mining coupled with the building activities, have done away with the unemployment problem in the Northwest to a considerable extent.

With a gain of 118 per cent for August 1921 over the same month last year, Seattle now ranks seventh in the entire United States in building activity. Los Angeles is the only city on the Pacific Coast surpassing this city. Building permits numbered 825 with a total valuation of \$2,218,270. There is no home speculative market and downtown construction is increasing.

PORTLAND

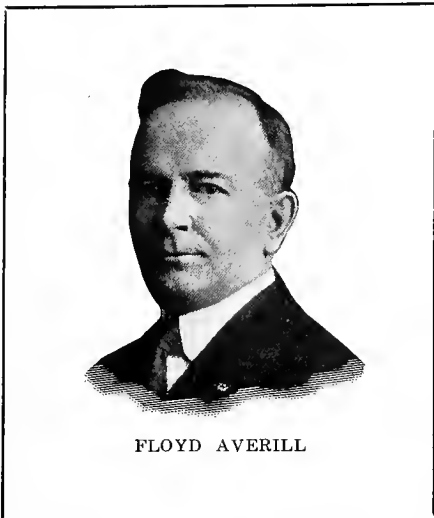
Noticeable improvements in retail business are reported and the volume of buying is expected to increase steadily as the season advances. Jobbing trade is of fair proportions.

The salmon fishing season on the Columbia River has just closed and is, in some respects the poorest in years. The catch is but 60 per cent of normal.

The lumber industry shows increased activity with 40 per cent of the logging camps running and mill production but 21 per cent below normal. New orders, especially for export shipments, are reviving the industry.

Building activities are booming, having reached almost pre-war proportions. Most of the construction work is in the home districts, yet there is some activity in the business centers.

Floyd N. Averill, general manager of the Fobes Supply Company, with headquarters at Portland, Oregon, is to be credited with much of the success of the recent quarterly session of the Pacific Division of the National Electric Supply Jobbers Association, held in the beautiful Paradise Inn of Mt. Ranier National Park. Mr. Averill has inaugurated his term of office as president of the western division with a definite focussing of jobber activities toward the forwarding of cooperative



FLOYD AVERILL

ideals in the West, following the tradition of leadership along these lines set by such western jobbers as W. L. Goodwin, who may be said to have initiated the cooperative campaign movement in the electrical industry. Mr. Averill has long been active in such work in his own district and the enthusiasm which developed at the recent meeting over which he presided is indicative of a constructive year ahead for the jobbers under his guidance.

R. H. Ballard, vice-president and general manager of the Southern California Edison Company, has just returned to his office in Los Angeles after a trip to Alaska.

D. E. Harris, vice-president and sales manager of the Pacific States Electric Company, San Francisco, has resigned from membership on the advisory committee of the California Electrical Co-operative Campaign. Mr. Harris' decision to retire from this work comes as a source of regret to those who have followed the helpful work accomplished by the campaign.

Harry Turner, general manager of the Montana Electric Company of Butte, Montana, and of the Washington Electric Supply Company of Spokane, after attending the recent meeting of the Electrical Supply Jobbers Association in Mt. Ranier National Park, visited his Spokane and Butte headquarters and returned again to Carmel-by-the-Sea in California where he expects to spend the winter. Mr. Turner is one of the oldest pioneers in the electrical industry in the West. He started in the electrical business in the West first at Portland in the early nineties and later was for eighteen years general manager of the Montana Power Company, retiring from this activity in 1910.

Personals

George Ellory Hale, director of the Mt. Wilson Astronomical Laboratory, has been elected president of the Pacific Division of the American Association for the Advancement of Science. C. E. Grunsky, consulting engineer of San Francisco, was elected vice-president.

A. B. West, vice-president and general manager of the Southern Sierras Power Company and president of the Pacific Coast Division, N. E. L. A. is now in the East where he is attending an executive committee of the National Association in behalf of Pacific Coast interests.

R. M. Alvord, manager supply department, General Electric Co., San Francisco, has returned to his San Francisco office from a six weeks' business tour of the East, during which he visited New York and Schenectady, and attended the annual sessions at Association Island of national lamp companies.

Franklin T. Griffith, president of the Portland Railway, Light and Power Company, is receiving congratulations on the economic attainments of one of his steam power plants at Portland in which during a recent run wherein hogged fuel was used, an overload rating of 306 per cent was maintained for some time.

F. S. Bird, general superintendent of the Texas Construction Company, with headquarters at Dallas, Texas, and R. J. Hughes, electrical engineer for the Electric Bond & Share Company of New York, and president of the Texas Construction Company, were recent visitors in Salt Lake, having driven 3000 miles by automobile through Texas, Arizona, New Mexico, Colorado and Utah. Mr. Bird was formerly with the Utah Power & Light Company.

Laurence W. Davis, electrical engineer and representative of the National Association of Electrical Contractors and Dealers, addressed a gathering of electrical men representing all branches of the industry in Colorado at a dinner which was given in his honor by the Electrical Co-operative League at the Shirley-Savoy Hotel, August 4th. T. O. Kennedy, chairman of the electrical league and general superintendent of the Denver Gas & Electric Company, acted as toastmaster.

F. E. Stein, chief electrical and steam engineer for the Carlisle Pennell Lumber Company with headquarters at Onalaska, Washington, is receiving congratulations over the record run made by his company during the past year, in which over three hundred thousand board feet of lumber were cut on a single cut saw in one day of eight hours. This is a striking instance of what electrification of the saw mills is accomplishing in the Northwest. In Mr. Stein's company the total installed capacity of electrical motors is 3200 horsepower and consists of 220 distinct motor installations.

Howard J. White of Keeler-White Company is now on a three months trip through the Northwest where he expects to visit some of the largest eastern cities before his return to San Francisco about November first.

George H. Rosseter has resigned as vice president and general manager of the Pacific Mail Steamship Company, and T. A. Graham, assistant traffic manager of the Southern Pacific Company has been appointed his successor.

Paul M. Downing, chief engineer of the Pacific Gas & Electric Company, has been called to Washington by Secretary of Commerce Herbert C. Hoover, to act as an expert for the government in passing upon Henry Ford's Muscle Shoals offer.

Stephen I. Miller, manager-secretary of the Northwest Electrical Service League, delivered one of the principal addresses at the Convention of the Idaho Association of Electrical Contractor-Dealers held at Boise, September 4 and 5.

A. M. Jackson, formerly in the supply department of the General Electric Company, at Schenectady, is now located with the Locke Insulator Corporation to have headquarters either in Denver or Salt Lake City, announcement of which will be made at a later date.

Arthur H. Halloran has resigned as Pacific Coast representative of the McGraw-Hill Book Company, to become editor of the Pacific Radio News and president of the Pacific Radio Publishing Company of San Francisco. Mr. Halloran brings to his new work an experience based on twenty-five years of publishing, including editorial and business association with the California Journal of Technology, Mining and Scientific Press, and Journal of Electricity. He has also just been elected president of the newly organized Pacific Radio Trade Association, a cooperative



A. H. HALLORAN

organization to stabilize business conditions in the radio field and to inform the public regarding the benefit of radio communication.

J. G. Scrugham, chief engineer for the State of Nevada, was a recent Los Angeles visitor in the interests of the conference developments on the Colorado River project of the city of Los Angeles.

J. H. Sroufe, "Harry" to his many friends, who was elected president of the Oregon Association of Electrical Contractors and Dealers at the annual convention held in Eugene in June is planning some very constructive work for his association for the coming year. He entered the electrical business in 1899 in Seattle when he went to work for the Northwest Electric and Fixture Company. Later he was employed by the Seattle Electric Company, the Electrical Engineering Company and Stone & Webster Company.



J. H. SROUFE

In 1912 he came to Portland as local manager for the NePage-McKenny company and in 1917, together with Sam Jaggar and A. A. Tobey he organized the firm of Jaggar-Sroufe Company. During the war this firm specialized in marine work and is now one of the largest electrical engineering contracting organizations in Portland.

For a number of years Mr. Sroufe has been an active worker in the Oregon Association of Electrical Contractors and Dealers and during his regime as president will strive to bring about state inspection, 100 per cent membership in the association throughout the districts of the state, with each district holding regular meetings, and better cooperation with the other branches of the industry through the medium of the Northwest Electrical Service League.

Henry R. Stevens, for the past two years resident construction engineer on the Kerckhoff project of the San Joaquin Light and Power Corporation, is making his headquarters in San Francisco and will devote his time to the manufacture and sale of the new fused horn-gap cut-out and disconnecting switch recently perfected by himself and Harry L. Wood.

Lewis A. MacArthur, general manager of the Pacific Power & Light Company, known affectionately to the electrical industry throughout the West as "Tam," is making an extended trip by automobile from Portland through central California into the southern district of the state. Mr. MacArthur is making a study of the hydroelectric situation of the territory through which he is passing and will wind up in Los Angeles to attend the annual meeting of the Pacific Coast Gas Association, which will be held in Los Angeles the middle of September.

Robert Cash, local manager, Los Angeles District, and **James Cranston**, of Portland, manager, Northwest District of the General Electric Co., are both recent San Francisco visitors.

W. E. Geerling, resident engineer for the International General Electric Company of New York at Surabaya, Java, passed through San Francisco recently enroute to Java following a visit to the eastern offices of the company.

Dr. C. G. Darwin of Cambridge University, England, will assume the chair of mathematical physics at California Institute of Technology. Dr. Darwin comes of a scientific family, being grandson to Charles Darwin and son of Professor George Darwin, astronomer.

Frank R. Devlin, formerly member of the State Railroad Commission, and **Douglas Brookman** are associated under the firm name of Devlin & Brookman for the general practice of law particularly including consultation and advice relating to public utility regulation and matters before the State Railroad Commission. They have opened offices in the Hobart Building in San Francisco.

F. H. Harvey has the position of president of the Sacramento County Farm Bureau and is a director of the California Farm Bureau Federation and a member of the community on the public utility department of the Federation. **Dr. W. H. Walker** of Wilhams, Cal., is president of the California Farm Bureau Association which is doing so much to further the agricultural development of the state.

Edward L. Beach, Commandant of Mare Island Navy Yard, at Vallejo, Cal., has recently added to his record of accomplishments by turning over to the Navy the new battleship U. S. S. California. This giant man-of-war, electrically operated throughout, is today the most powerful in the national navy. The California now lies in San Francisco Bay awaiting commission, under Admiral Eberle, as flagship of the Pacific Fleet.

W. A. Schoel, district manager of the North Coast Power Company with headquarters at Chehalis, Washington, is rapidly rounding his service into excellent condition by extensive improvements and overhauling of the two thousand horsepower steam plant of his company located at Chehalis. The installation of dutch ovens for the burning of hogged fuel along with the installation of the latest in steam measuring equipment will mean much for economic operation in the future.

A. C. MacMicken, sales manager, Portland Railway, Light and Power Company; **A. S. Moody**, Portland district manager, General Electric Company; **M. M. Mossman**, Seattle office, United States Steel Products Company and **Robert Sibley**, editor, Journal of Electricity and Western Industry, together with three others including an experienced Swiss guide who had successfully made the summit nineteen times during August, attempted to climb Mt. Rainier on August 30-31. When within a thousand feet of the summit after all serious obstacles in the climb had been overcome, a terrific and blinding snow storm came upon the party, the guide lost his way, and for some time it looked as if serious doubts might well be entertained as

to the ability of the party to safely descend the mountain.

Obituary

Lloyd W. Chapman, industrial editor of the Journal of Electricity and Western Industry passed away suddenly on the morning of September 6 at his home in Berkeley, after a brief attack of spinal meningitis. Mr. Chapman had been at his desk in the offices of the Journal of Electricity and Western Industry on the previous Saturday and his sudden passing will come as a great shock to his many friends in the industrial field throughout the West. Mr. Chapman's death marks the early closing of a noteworthy career which promised great things for the future. He was born February 17, 1885, in Massachusetts. In 1908 he was graduated from Massachusetts Agricultural College with a degree of B. S. He took charge of the electrolytic laboratory of the Anaconda Copper Company at Great Falls, Montana in 1910. He continued in this position until January, 1915, when he resigned to take a position as chemical engineer with E. T. Du Pont de Nemours Company at Wilmington, Delaware. With this company during the war he had charge of important government work with which he had remarkable success. In the recovery of solvents used in the fabricoid department he designed a new apparatus which greatly increased the percentage of recovery. In May, 1919, he entered the employ of the McGraw-Hill Company as Pacific Coast editor of Chemical and Metallurgical Engineering. In February of the current year he was transferred to the position of industrial



L. W. CHAPMAN

editor of the Journal of Electricity and Western Industry.

His writings were recognized, not only as able and forceful, but as sensing industrial situations that proved of great helpfulness to readers throughout the West. He leaves a widow and two children. Mr. Chapman was secretary of the local section of the American Chemical Society. His loss will not only be greatly felt by his associates but by a host of friends in the industrial activities of the West.

Construction News and Industrial Developments

Suggesting to the Engineer, Contractor, Manufacturer, Dealer, Agent and
All Business Men Opportunities for New Business

THE PACIFIC CENTRAL DISTRICT

WILLOWS, CAL.—An elevator for the bulk handling of paddy rice from the Willows district is to be erected immediately at the Southern Pacific Siding at Ruiz, by William H. Stewart, of Glenn.

SAN FRANCISCO, CAL.—The contract for construction of a complete irrigation system in Lassen county for the Eagle Lake Irrigation District has been awarded to the Grant-Smith Co., of San Francisco. The Smith bid was \$1,000,000.

SACRAMENTO, CAL.—Preliminary estimates for a municipal power plant for Sacramento are being made. Approximately \$8,000,000 is to be spent according to City Attorney R. L. Shinn. A site on the American river near Folsom has already been secured.

VALLEJO, CAL.—An appropriation of \$150,000 for improvements in the Central Power plant at the Mare Island yard has been received. It covers the installations of Allis-Chalmers make, and the rebuilding of the circulating loop to this central power station.

STOCKTON, CAL.—The Western States Gas & Electric Co. has been authorized to sell at not less than par \$111,000 of its 7 per cent cumulative preferred stock. This is to finance, in part, the construction on Silver Creek of one of the new hydroelectric plants.

BRENTWOOD, CAL.—The State Bond Commission has approved the \$650,000 bonds of the Knightsen Irrigation District. About \$300,000 will be used in the construction of a distributing system, including both open ditches and a pipe line. Bids for this work will be opened September 15th.

BRENTWOOD, CAL.—The Board of Directors of Knightson Irrigation District will sell a part of the First Issue of Bonds of the district to the amount of \$100,000. Bonds are of the denomination of \$1000 each and bear interest at the rate of six per cent per annum. The bonds will be sold Sept. 19th at 1 o'clock.

SAN FRANCISCO, CAL.—Plans for the largest irrigation project in the state came to light with the filing of the application of the Iron Canyon Project Association to divert 2500 cu. ft. of water per second from the Sacramento river above Marysville to irrigate 284,393 acres in Glenn, Butte and Tehama counties. Boring at the damsite and surveys have been made.

SAN RAFAEL, CAL.—San Rafael is assured a canal leading to deep water. Two proposals were submitted to the electorate Aug. 25—one of a tax of \$12,000 for completion of the canal and \$50,000 for new permanent street work. The former carried 9 to 1 and the latter 4 to 1. The tax for completing the canal will extend over a period of three years. Work will begin within 30 days.

WILLOWS, CAL.—Active steps to have some 20,000 additional acres west of Williams and Maxwell annexed to the Glenn-Colusa Irrigation District have been taken with the circulation of petitions among the land owners pledging them to pay 10 cents an acre for the preliminary work. The money thus secured will be used to make a preliminary survey for the construction of a canal to carry water to this section.

SACRAMENTO, CAL.—Bids for a filtering basin to be installed at the filtration plant on the Sacramento River will be opened by the city council on Sept. 21. The basin will have a capacity of approximately 5,000,000 gallons of water and will cost \$160,000. Work is to be started before the winter rains and it is expected that water will be turned into the city mains from the plant by December 1. It is later expected to expend approximately \$900,000 on additional improvements to the plant.

MONTAGUE, CAL.—It was reported on August 31st that plans are being made by the Klamath-Shasta Valley Irrigation District in conjunction with the U. S. Reclamation Service, and preliminary surveys are now being carried out, for the construction of an irrigation system for at least 115,000 acres of land, estimated cost about \$12,000,000. Estimated cost of survey is about \$50,000 of which one-third has been appropriated by the State, \$5,000 by the U. S. Reclamation Service and the balance by assessment.

PLACERVILLE, CAL.—Announcement that the Michigan, Cal., Lumber Company proposes some time to abandon its plant at Camino, seven miles from Placerville, for a location on the American river, has been followed by a call for a meeting of the El Dorado Chamber of Commerce which was held August 31. Assistant Manager J. Danaher of the lumber company says that water is lacking; that the company was seeking a new location for the mill, but had not yet found the location it desired. The removal of the plant is not planned for the near future. The proposition will involve the construction of a railroad from the mill to connect with the Southern Pacific.

THE PACIFIC NORTHWEST

SCIO, ORE.—Scio's municipal hydroelectric plant located on Thomas Creek was recently placed in operation. The cost of the plant was more than \$50,000.

OLYMPIA, WASH.—The contract for furnishing and installing lighting fixtures in the Temple of Justice at Olympia, Wash., has been awarded to the H. E. Gleason Mfg. Co., of Seattle. The contract approximates \$27,000.

BEND, ORE.—Construction work, it is reported will begin at once on two dams at Silver Lake and one at Summer Lake on irrigation projects. Over 100 men will be employed. Otto Hansen & Co., of Spokane, are the contractors.

RAINIER, ORE.—The Rainier Manufacturing Company, a \$1,000,000 cooperative concern has begun work on the first unit of its six unit mill at this place. The company will manufacture lath, sash and doors, boxes and baskets and operate a sawmill.

PORTLAND, ORE.—Construction of spur dikes to cost \$30,000 for the improvement of North Portland harbor has been authorized by the Port of Portland Commission. Contracts for the work have been let and construction will begin immediately.

OLYMPIA, WASH.—The Pasco Grain and Milling Company was recently incorporated here for \$150,000, by A. Koerner, C. J. Young and B. C. Dey, all of Portland. It is understood that the company will build a mill and elevator here in the near future.

YAKIMA, WASH.—The plant of the Rattlesnake Lumber Company, near Yakima, Wash., was completely destroyed by fire with a loss of \$50,000, fully insured. The plant is owned by E. D. Evans of Naches, and it is reported, will be rebuilt immediately.

SEATTLE, WASH.—The main mill building of the Ellis-Myroie Lumber Company, Seattle, was recently damaged by fire to the extent of \$125,000. The plant was insured for 90 per cent of its valuation, and the management states it will be rebuilt immediately.

SEATTLE, WASH.—The Board of Public Works, on Sept. 2, awarded the contract for the construction of a trestle on First Avenue South for the Seattle Municipal Street Railway Department to Hansen & Hauge, Seattle, on a bid of \$31,790. There were thirteen bidders on this work.

TILLAMOOK, ORE.—The Tillamook County Box and Manufacturing Co. is a new corporation which proposes to build a new box and manufacturing plant at Twin Rocks, this county. The plant represents an expenditure of \$49,000. The incorporators are E. Harron, I. A. Dubois and Frank Readon.

ALOHA, WASH.—With the survey of the site of the Aloha Lumber Company's mill at Aloha completed, work on building a shingle mill as the first unit of the plant to replace the one destroyed by fire will be started as soon as plans are drawn. The mill proper will not be built until next spring.

SEATTLE, WASH.—The Seattle Chamber of Commerce has received a statement from president G. W. Merrick of the Merrick Company, Yakima, Wash., to the effect that his company will shortly ask for bids on a \$25,000,000 contract for the construction of a concrete-lined irrigation canal in the Yakima valley.

SEATTLE, WASH.—The Board of Public Works, on September 2, awarded a contract for furnishing two 7,500-kva. transformers to be installed at the Cedar Falls station of the Seattle Municipal Lighting system to the Westinghouse Electric & Manufacturing Co., on a bid of \$20,781. The company promised delivery in eight weeks.

SEATTLE, WASH.—The NePage-McKenna Company, electrical contractors, Armour Building Seattle, on a bid of \$33,350, was recently awarded the contract by the Seattle School Board for the installation of the electrical work in the \$1,250,000 Roosevelt High School now under erection in Seattle. The Rounds-Clist Company has the general contract.

HOOD RIVER, ORE.—The installation of new lamps and improved type of fixture in the downtown district, has already been completed by the Pacific Power & Light Company. It is said that this is the first step in a plan of general lighting improvements for the entire city to be carried out under a new contract between the city and the power company.

PORTLAND, ORE.—The public works department of Wellington, New Zealand, has announced that a large hydroelectric plant is to be installed in that city in the near future and that bids will be invited from the United States, Great Britain, Canada, France and Switzerland. Plans and specifications for the plant and equipment have been received by John Hall, acting consular agent for New Zealand, with whom contractors may com-

municate through the foreign trade department of the Portland Chamber of Commerce. The estimated cost of the plant is \$1,250,000.

PORTLAND, ORE.—The Northwestern Electric Company will spend \$5,000,000 in the next four years to keep pace with the demand of Portland and vicinity for power, heat and light. It is contemplated to raise the money for new developments in plant and distributing systems by disposing of securities, the issuance of which will be based on the earning power of the corporation.

KELSO, WASH.—The Black Bear Coal Company has been incorporated by Dr. A. E. Bellman, Dr. T. L. Perkins and F. E. Hotchkiss of Portland, Oregon, and a 30 year lease taken on the Huntington coal mine near this place. The company plans to operate the mine primarily to produce certain valuable chemicals which can be extracted from the coal and a \$40,000 extraction plant will be erected at once.

PORTLAND, ORE.—Announcement has been made by John Hall, acting consular agent for New Zealand, that the public works department, Wellington, has just completed arrangements for calling for bids for the plant in connection with the Mangahao hydroelectric power scheme. The amount involved aggregates approximately \$1,250,000. Mr. Hall suggests that anyone interested write directly to the minister of public works, Wellington, New Zealand, for details.

THE INTERMOUNTAIN DISTRICT

SALT LAKE CITY, UTAH.—Frank L. Cox, of St. George, Utah has filed application with the state engineer for the diversion of 10 cubic-ft. of water from Santa Clara creek to generate electric energy.

NEVADA CITY, NEV.—Engineer A. A. Codd is preparing plans for the construction of a power house penstock and transmission line for the Delhi Power Co., at Nevada City. Bids will be called for about the first of the year.

RED LODGE, MONT.—Approximately \$100,000 will be spent on the construction of a dam at the lower fork lake of Rock Creek, according to S. C. Kimball, civil engineer of Billings, who is completing arrangements for the commencement of work on the project.

SALT LAKE CITY, UTAH.—A. H. Cowie, of Salt Lake City, has made application to the state engineer for permission to divert 20 sec. ft. of water from Little Cottonwood creek in Salt Lake County, to generate electric energy. It is planned to generate 1500 hp. A canal 13,700 ft. in length and a pipe 22 in. in diameter will divert the water.

BOISE, IDAHO.—Producers and shippers in eleven counties in southwestern Idaho and eastern Oregon are organizing the Idaho-Oregon Traffic association, with a view to improving market conditions and the movement of produce more rapidly. This is the second association of its kind to be organized in the southern part of the state, the Twin Falls section having formed an association recently.

GREELEY, COLO.—The Home Gas & Electric Company, of Greeley, Colo., has doubled the capacity of its distributing system by completing the installation of three 400-kva. transformers at its substation on Ninth avenue in Greeley. The new equipment doubles the capacity of the former station. The company serves Greeley, Eaton, LaSalle, Ault, Kersey and Pierce, Colo., besides a large farming territory.

DENVER, COLO.—A decision rendered by the Department of the Interior permits Denver to bid for a large tract of land twenty-four miles from that city at the north and south forks of the Platte River. If the city acquires the land it will proceed with plans for the construction of a dam 265 ft. high which would im-

pound 135,000 acre-ft. of water. It would permit the construction of a huge power plant. The total cost of the project is estimated at \$5,000,000.

POWELL, WYO.—Powell will be unable on Jan. 1 to take advantage of the electrical power from the Reclamation Service's hydroelectric plant near Shoshone dam. The town has been unable to place bonds voted to finance the construction of a system for distributing the electrical current, and provision of this system will be delayed until such time as the bond market improves sufficiently for the town council to secure an acceptable bid for the bonds. The best bid offered is 80 cents on the dollar.

SALT LAKE CITY, UTAH.—David P. Black and Walter C. Lyman, of Blanding, Utah, have filed application with the state engineer to divert 50 cubic-ft. of water from the Southeast fork of Indian creek and its tributaries to irrigate 16,920 acres of land in San Juan county. The applicants propose to tunnel through the main ridge of the Blue mountains, connecting the source of supply with the headwaters of Johnson creek. In addition to using the waters for irrigation it is proposed to use it for a water supply for Blanding. The canal to carry the water will be one mile in length.

SALT LAKE CITY, UTAH.—The Interstate Irrigation Company, of Manila, Utah, has filed application with the state engineer for the diversion of 80 cubic-ft., and 5000 acre-ft. of water from the Burnt Fork and Lost creeks in Summit county, for the purpose of irrigating 19,096 acres of land.

The water which it is proposed to divert is to be collected in three reservoirs which are to be filled during the non-irrigation season, 50 cubic-ft. from Burnt Creek and 30 cubic-ft. from Lost creek. The works are to be earthen dams, and the water is to be carried through a canal 68,840 ft. in length.

THE PACIFIC SOUTHWEST

SANTA FE, N. M.—Work will begin at once on the enlargement of the ice plant at Clovis. The capacity will be increased to 3,000 tons.

RIALTO, CAL.—Plans are under way for the establishing of the Bear Ammonia Washing Powder factories at Fullerton in Orange Co. Clay Byron will have charge.

PHOENIX, ARIZ.—Definite plans are being made for beginning necessary work to control Cave Creek and blot out the menace from flood waters. A committee has been selected to have charge, including state engineer Maddock.

LONG BEACH, CAL.—George B. Crist, Utica, N. Y., contemplates moving his factory for the manufacture of rubber roofing and rubber shingles to Long Beach, according to George A. Brown, industrial secy. of the Chamber of Commerce.

LOS ANGELES, CAL.—The Arro Plane Co., recently organized with a capital of \$500,000 to manufacture passenger-carrying airplanes, is contemplating the location of a factory near Los Angeles, to cost \$100,000. O. K. Jeffreys is president.

SAN DIEGO, CAL.—Striking proof of business activity is seen in the eight months building record just published. In 1920 the permits amounted to \$1,983,074 up to September 1, and 1921 figures for the same period show \$4,158,539 or an increase of 109 per cent.

HOLTVILLE, CAL.—City trustees have authorized the sale of \$10,000 of bonds voted for improvement of the water system, and building sluiceways and heading in the Holton Power Canal. The sale was made to the California Company of Los Angeles. \$9,000 will be expended through a contract made with Charles Frisbie.

SAN FERNANDO, CAL.—The public service commission has authorized Chief Engineer William Mulholland to continue the work of increasing the height of the dam of the Upper San Fernando Reservoir at the lower end of the Los Angeles aqueduct so as to increase the storage capacity of the reservoir.

REDLANDS, CAL.—There is some talk of the city entering the field of electricity supply in competition with the Edison company. Feeling that such duplication is detrimental to the community the City Trustees are investigating the problem, with the purchase of the Edison local system as a possibility.

VAN NUYS, CAL.—The Bureau of Power & Light of Los Angeles, will establish another power house in the San Fernando Valley, which will have a capacity of 8000 hp. bringing the total of the city's power system up to 80,000 hp. The plant will be located near San Fernando Boulevard at the foot of Cascades St.

CORONA, CAL.—The W. H. Jameson estate contemplates the erection of a modern packing house for handling oranges and lemons at North Sheridan and Railroad streets, to cost \$25,000. The building will be 320 x 125 ft., of wood and corrugated iron construction. Plans are drawn by Stanton, Reed & Bibbard, Los Angeles architects.

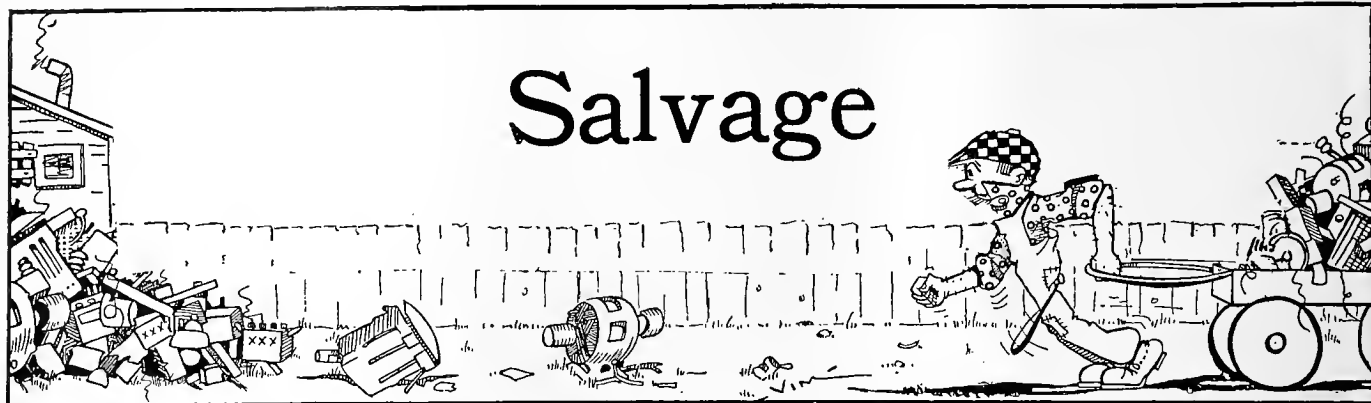
PHOENIX, ARIZ.—Central Arizona Light and Power Company is planning to take care of the rapid growth now noticeable in its territory, by the immediate expenditure of \$500,000 in extensions and additions to capacity. The residence construction for six months in 1921, has equalled the previous four years all put together and there is no indication of a let up.

LOS ANGELES, CAL.—The Associated Telephone Company of Long Beach is taking bids for the erection of a three-story and basement fireproof office and service building, corner 5th and Elm Street, to cost \$250,000. Switchboard and operating departments will occupy the third floor, terminal racks and charging machines the second, and main offices to be on the lower floor.

LOS ANGELES, CAL.—A preliminary permit for development of 150,000 hp. south of Diamond Creek on the Colorado River in Mojave County, Ariz., has been granted to James B. Girard, of Phoenix, Ariz., by the Federal Power Commission. One year is allowed for completing data for a license. The granting of the permit, the commission says, marks an epoch in hydroelectric development in the southwest.

REDLANDS, CAL.—The manufacture of artificial gas will be a thing of the past and the community will get the benefit of a more economical supply from natural gas fields. The Citrus Belt Gas Company has sold its properties to the Southern California Gas Company and new mains will be laid to connect with the natural gas distribution system. It is understood that a big cut in rates for gas will be made.

LOS ANGELES, CAL.—A large hotel and other improvements are to be erected at a resort recently purchased by Los Angeles capitalists, formerly known as Little Bear Valley, renamed Arrowhead Lake. Millions are to be expended, according to detailed plans. Another lake on the west fork of Mojave River is planned behind a dam 150 feet high. Arrowhead Lake dam is to be raised 31 ft. to impound 62,000 acre ft. of water and irrigate 50,000 acres north of the mountains. A power plant is to be erected to furnish 50,000 kw-hr. annually and a winter road is to be constructed over the top of the 150 ft. dam from Hesperia. O. F. Brant, Wm. H. Allen, Jr., O. P. Clark, J. B. Van Nuys, Morgan Adams, A. E. Warminington, Harry Lee Martin, A. J. Salisbury, Jr., and R. F. Gross are interested in the project.



WE SEE BY THE PAPERS—

Similar Meetings will subsequently be held in Portland, Salt Lake, Denver, Los Angeles and California cities—

Los Angeles would seem to be as usual in the state of Self Satisfaction.

For Sale—Collapsible twin baby buggy. 311 West Oak. Phone 338 W.

It is usually the mother who collapses.

Fresh Eggs Show Brisk Turnover—Market Reports.

"Adam-and-Eve-on-a-raft-wrecked," we judge—or perhaps, like the old Western Pacific before they improved the road bed, the market is so unsteady that, irrespective of orders, it always turns out an omelet.

* * *

IT'S AN ILL WIND

1.

The ancient Greeks enjoyed a blessing,
Their trousers never needed pressing,
But to their joy some gloom attaches,
They had no place to strike their matches.

2.

The senators of ancient Rome
Need wear no frock coats when at home.
But they'd no cause to send up rockets
For togas never had hip pockets.

3.

The knightly warrior, in his armor,
Could well withstand a vamping charmer,
But still his joy was quickly busted
In case his armor joints were rusted.

4.

The helmets of the ancient Danes
In battle saved them many pains,
But think with awe-inspired dread
What happened to a swelled-up head.
(Borrowed).

5.

The pioneers who built the West
Were free from light bills and were blest;
But then with naught but candle light,
They had no movie shows at night.
(Strayed).

6.

Old Abram was a pretty sight,
Dressed up in shining robes of white.
But Mrs. A. grew lank and lean—
She had no patent wash machine.
(Lost).

7.

The devil gets what he is after,
But still we have good cause for laughter.
The pitchfork is a mekeshift roaster—
He has no fit electric toaster.
(Stolen).

* * *

An adjunct to the movies, namely a combination of the kinematograph and the gramophone, was recently demonstrated in London. A report states that "the speech-reproducing apparatus is so connected with the kinema projector that absolute synchronism is obtained, and the changing of "records" is automatically effected without a noticeable break in continuity. The gramophone is situated in the operating box and speech is transmitted to a loud-speaking

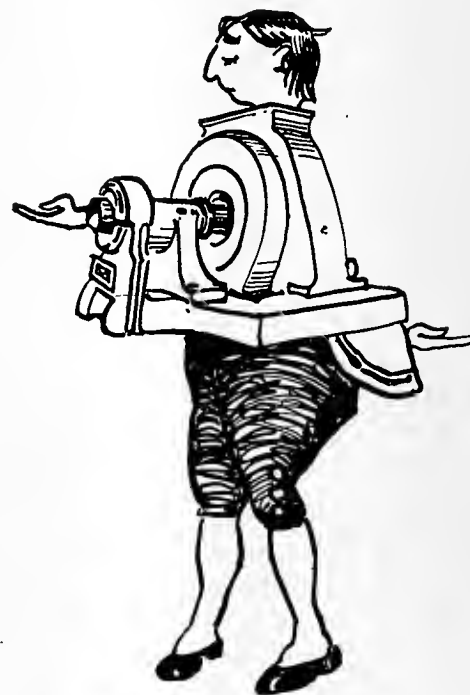
telephone in position near the screen. The result is a very lifelike effect auguring well for the future success of the apparatus."

That's all very well, but it seems to us that there are a number of practical difficulties in the way of carrying this idea too far. For instance, we have seen people say on the movies things that in a book would be represented by "—: —: —:!!" Now, is the gramophone going to be truthful or silent? Or will it just say sweetly "blank, blank, blank?"

Then there is another trouble. If it reproduces the speech it should certainly reproduce all the sounds that go with the picture. Just conceive of the versatile gramophone sobbing, firing pistols, being a regiment of galloping horses, and making a sound like a lemon pie coming in contact with Charlie Chaplin's head; to say nothing of kissing the heroine in the last scene.

* * *

ELECTRICAL HYBRIDS



XI—The Synchronous Condenservant

The synchronous condenservant's motto is to serve, However he's excited or his load.
When others lag behind or lead in trouble, to preserve A steady balance always is his mode.

He's an adjunct to his station, to the powers he's a prop,
He gives most when other forces show decline.
He is versatile and steady and he never takes a drop;
When in trouble—just get him upon the line.

Journal of Electricity and Western Industry

25 Cents a Copy

October 1, 1921

San Francisco

Where the Journal of Electricity and Western Industry Stands in the Matter of Political vs. Consumer Ownership

We Believe in the Future of the West

Facing the Pacific, with tremendous assets in natural resources, unparalleled climate and progressive spirit, the West is destined to become a great world center of industry and agriculture.

We Believe that the Future of the West is Bound Up with the Development of its Water Powers

Already the greatest per capita user of electricity, the West must look to its boundless water powers to supply the fuel for its growing factories and mines, the power for its further irrigation, the comforts and conveniences for its homes.

We Believe that the Best Interests of the West Lie in the Development of These Resources through Individual Initiative, Properly Regulated

Municipal Ownership

Results in unequal distribution of privilege between districts.

It leads to domination of surrounding areas by the cities to which they must come to look for electric service.

It is open to the dangers of political misrule.

It means as a rule, development of power in uneconomical units.

It means waiting for the voters' consent to bond issues to finance extensions which may be immediately needed.

It cannot take advantage of the diversified load nor show the high load factor which makes possible low rates to state wide private companies.

Under present laws, municipally owned utilities do not come under regulation of the utility commissions and hence may resort to rebates, special rates and other practices long since condemned in private business.

The law does not require standard accounting of municipally owned power development and in consequence no citizen is aware quite what he pays—in bills and in taxes—for his electric service.

Like most government ownership, it tends toward inefficiency.

Private Ownership

Is public ownership in every sense of the word.

Its stocks are largely held in small blocks by the very customers it serves.

Its financing is regulated by the public utility commission of the state in which it operates.

Its rates are fixed by the same commission and it is not allowed to earn more than a small return upon its actual investment.

It is impartial in its service, being required to serve all customers and all districts alike. No discriminatory rates are allowed.

Its accounting methods are open to public inspection and are continually checked by the state regulating body.

As a member of the California Railroad once put it, it has "no more privacy than a gold fish."

It is flexible.

It is efficient. Under its operation, rates have been reduced until they are now fifty per cent of what they were in 1900. It has attracted some of the brightest minds and clearest thinkers of the country to its ranks. Its engineers are among the foremost of the country and among their achievements are many feats of engineering which rank as world's records. Its business methods and ethics stand favorable comparison with progressive practice in any line of business today.

It has shown a far sighted readiness to meet the needs of the West and its program of power development as outlined constitutes the best chance of western industry today for the continually expanding power supply upon which it must be able to depend if it is to realize its possibilities.

Therefore, We Have Taken the Following Stand:

1. Privately owned utilities should be kept up to the highest standard of efficiency and service.

2. Nothing which does not represent the highest ethical viewpoint should be tolerated from them in their business relationships.

3. To this end, the state regulating commissions should be made up of the clearest thinkers and most far sighted business experts which can be gathered together.

4. This granted, the regulating commission and its decisions should enjoy the confidences and support of the people.

5. Municipal power projects should be brought under commission regulation and made to show the same clean record of efficiency required of privately owned companies.

6. Pernicious legislation, national, state or municipal, which would hamper development through private enterprise should be discouraged.

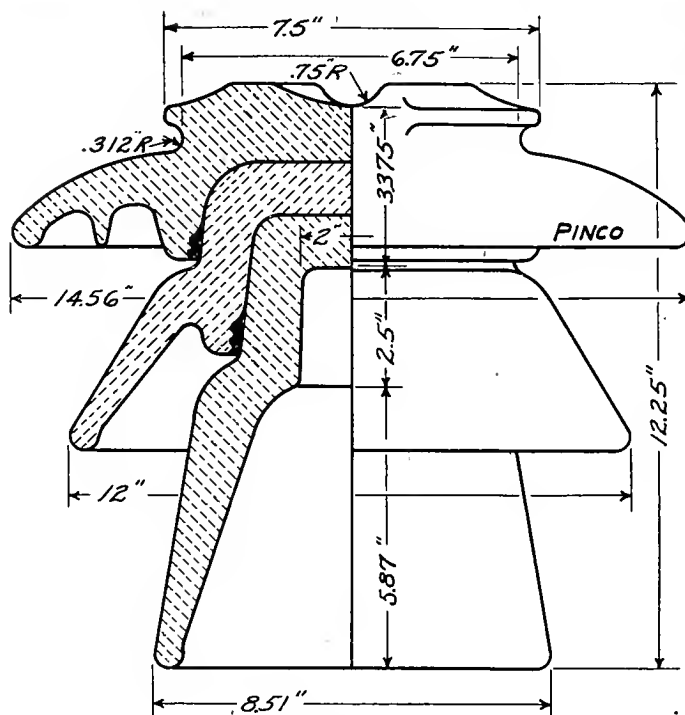
7. The power program as outlined by the electric public service industry of the West, should receive full support from western business men, both in helping to furnish the money by purchasing securities back of this construction program—and in creating the spirit of good will which is essential to the prosperity and growth of any industry.

Robert Sibley

Editor.

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Journal of Electricity and Western Industry

A semi-monthly chronicle of western events, advocating the economy, efficiency and convenience of electric power for all industries of the West—manufacturing, agricultural, mining, merchandising, home building and home making. Interpreting the value of electrical development to the business and financial man, the industrial man, the power man, wholesaler and retailer, contractor and constructor, engineer and home owner.

Because of the abundance of water power in the West susceptible of economical development, a dependable, uninterrupted supply of cheaper electric power is assured for these industries. The basic industry of the West—hydro-electric power generation—for which Journal of Electricity and Western Industry is the spokesman, is therefore logically and inseparably linked to the growth and prosperity of all phases of our daily life and business.

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A Proposal to Do a Job at Cost Under Strict Government Supervision

The Marble Canyon site on the Colorado River, where the Southern California Edison Company proposes to build a 500 foot dam which will impound forty million acre feet of water in an artificial lake over two hundred miles in length, with a possible development of two and one half million horsepower. The project outlined by the Southern California Edison Company in its application now before the Federal Water Power Board, suggests the carrying out of this great undertaking as a cooperative enterprise, together with such other power companies as may wish to participate, construction work to be done at cost under supervision of the government, with the interests of flood control, irrigation and power needs alike conserved.

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ROBERT SIBLEY, EDITOR
Clotilde Grunsky — Associate Editor

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SAN FRANCISCO, OCTOBER 1, 1921

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Equalizing Privileges in Agricultural and Industrial Development

RECENT events have served to focus western attention on the problem of how far we are prepared to suffer city domination of western political and industrial development. The storm of protest called forth from country newspapers, agricultural journals and rural organizations against the alleged attempted control of California power resources by Los Angeles is significant of the resistant force which has already developed against such a contingency.

Clear thinkers see four distinct things which are going to happen as a result of the united feeling aroused in this campaign of publicity. First, a move will be made at once to restrict the representation in the state senate to one from each county, as has been done in New York, Minnesota and other states to keep the large cities from exerting undue influence. Second, a move will be made to adjust the tax burden of the state so that the city and the rural districts will each bear its burden of state taxes, which is not the case in California at the present time, due to the fact that privately owned utility plants pay state taxes while municipally owned plants pay none whatsoever. Third, steps will be taken to bring municipally owned power systems directly under the control of the California Railroad Commission.

One of the evils which was charged against the former system of unregulated private utilities was the power of unrestricted contract, by which the utility could furnish power or water to any favored customer at less than cost if it so desired and recoup by higher rates charged against other consumers. The theory of commission regulation is that rates should be so adjusted

that every user pays his share of the expense which went to produce the power he uses and no one is forced to pay another's bills. The municipally owned utility is still back in the middle ages of unrestricted contracts, however, and it is possible for such a plant to offer power below cost in order to induce industries to locate within the community. Citizens of districts served by state regulated utilities have a right to demand a curtailment of special privileges for special districts in attracting industry. There is in fact no valid argument against commission regulation of city owned utilities which does not apply to privately owned utilities as well—and the exemption of municipalities is an attack against the principle of regulation.

In the fourth place, legislation will be introduced into federal legislative halls and probably in state legislatures to keep the cities from tying up water power sites indefinitely. At the present time, large reserves are held under special enactments of congress by certain cities of the West without a clause demanding immediate or early development.

The proposal to place an initiative measure upon the ballot in November, 1922, to enable cities and organized districts to finance themselves at the expense of the state of California only serves to aggravate the situation, offering, as it does, an opportunity for small units, principally for the cities, further to escape taxation.

The immediate question is one of California emergency—but the basic problem of city domination is one which is becoming acute in other districts of the West as well and one which this region must prepare to face.

The Power of Research in Forwarding Human Happiness

FOUR things are necessary for successful research: first, a definite, concise and authoritative organization of the knowledge possessed upon the subject; second, a proper interpretation of this knowledge focused upon the subject in hand; third, the application of the fundamental laws deduced so as to further advance knowledge upon the subject, and fourth, the direction of the information secured into those channels which will result in benefit to humanity.

Modern evolution in the transmission of hydro-electric energy, in which the West has played the leading role, well illustrates the power of research or organized knowledge in the forwarding of human happiness.

To those engaged in the electrical industry, the inspiring statement of John C. Merriam, president of the Carnegie Foundation, to the effect that "Electricity now furnishes one of the great foundation stones upon which the advance of civilization rests," comes as a pleasing word of approbation and a powerful inspiration to go and do things hitherto thought unattainable. The word sent out recently from one of the great research laboratories of a large eastern electrical manufacturing concern that one million volts at sixty cycle frequency has now become possible in the laboratory and that the laws of electricity which apply at commercial voltages are found still to hold good under this tremendous pressure, opens up vistas of vast possibilities for the future. While it is true that a four-inch conductor or a tube of such diameter may be required for trans-

mission purposes, and while it is true that generating units larger than have hitherto been dreamed of would be necessary to overcome charging currents over distances beyond any now thought possible of practical attainment, and while it is true that the insulator problem is at present solved only for the 220,000-volt limit, still these obstacles to be overcome are only such apparently impassable barriers as have many times been overcome in the past in the evolution of the wonders of electrical transmission. It is curious to remember that only thirty years ago, the limit was twenty miles in distance and 10,000 in voltage and that some years later a prominent engineer was contending that the absolute physical limit had been reached with 40,000 volts.

It would seem that the West has drawn nearer by another milestone to the time when the development of a wonderful network of industrial power lines will place the unequalled water power resources of the West at the full command of manufacturing, industry and agriculture and make for this section of the country an empire which shall exceed anything hitherto attained in progressive development and in happiness for the human race.

The Necessity for Revitalizing the Movie Industry

WESTERN business men are tremendously interested in the future prosperity of the moving picture industry—and to the electrical industry this becomes a self interest which cannot be overlooked. Not only is the payroll of the movie industry in the West of material importance to the community, in that some 15,000 persons are engaged in this work receiving something like \$30,000,000 a year for their services, but the electrical equipment used in the hundred odd studios located in this section, in some instances costing over a million dollars per studio, makes this industry an important electrical market.

Hence, it is with some concern that thoughtful citizens view the present status of the moving picture industry. This editorial, as a consequence, is written with the idea of calling attention to the necessity of giving constructive thought to bettering the moving picture product which is now being put upon the market from the West. If careful attention is not given this, the good will of the industry which is so much responsible for the distribution of western made films throughout this nation and in foreign markets, will be seriously jeopardized. The public is weary of the low grade material that is now being allowed to go into the moving picture theatres of the world. Unless the whole industry can be put upon a higher plane, alike of morals and workmanship, it cannot long hold the favor which has been the foundation for its remarkable development during the last decade. There has been too much of chance development in this important art and too little of concerted action to bring about real constructive effort. The West is so vitally interested in this great industry that it cannot allow the situation to go without an effort to remedy the evils from which it is suffering.

The Northwest League Builds for the Future

AMONG the constructive enterprises which are part of the excellent educational work already instituted by the Northwest Electrical Service League, especial attention is being paid to the public schools. Besides the placing of electric appliances where possible in the domestic departments of the high schools, twenty educators of Washington, Oregon and Idaho have under preparation twenty-five page articles on resources of the Northwest. Among these resources will be hydroelectricity and its uses. Dean Miller of the League and Professor H. T. Lewis of the University of Washington will edit this book of material which will be placed in the public schools of the three states at cost. No names or firms will be used in connection with the material and method of compilation will enable its use from the eighth grade through the high school of the three states. This material will serve as subject for themes in connection with English and as supplementary reading for American industrial history, commercial geography and economics. This is a "long-run" publicity meant to reach tens of thousands of students passing through the eighth grade and high schools. These early readings and impressions are never forgotten and should constitute the basis for a better understanding of the Northwest and a sense of loyalty in Northwestern activities.

Solution of Drainage Problem on Irrigated Land

IRRIGATION farming in the West has been forced to many extremes to avoid suspension of crop raising and financial failure. Raising the underground water table due to irrigation, may ruin the land from waterlogging or destructive contamination from the water itself. This problem has developed in many reclamation projects therefore any solution of such difficulties has a wide range of interest.

Such was the case with the Salt River, Arizona, project about the time the Water Users Association began the administration of this valley in 1917. With an abundant supply of water it later developed that sections of this valley did not have natural drainage and surface water soon made its appearance, drowning out the root and plant growth, and became a problem in itself.

By installing motor-driven wells at intervals of one mile, this underground water has been drained off and in some cases used again as irrigation supply. In some instances this water contains too much alkali and is thrown away, thereby washing out the soil in a cheap and permanent manner.

In the beet sugar lands of Orange County, California, this washing out process has been going on long enough to prove its economic value. It is worth noting that similar applications of power pumping may make possible the complete adaptation of alkali land for farm purposes. Citrus crops have followed alfalfa onto such ground, formerly shunned because

of the bugaboo of alkali. Bringing such land into production again proves that water and power are the essential agencies commanded by western industry.

Research Needed on Electric Range

VERY little research work has been done to date on the domestic science side of the electric range. Methods of efficient operation, comparative costs, scientific elements entering into a preparation of food for its use and other similar information which would not only provide good sales data, but which might furnish suggestions leading toward an improvement of the range itself—all these are awaiting investigation by the proper interested or disinterested parties. Knowing the excellent cooperation which has been secured from universities of the West in the study of other problems of electrical interest, from 220,000-volt insulators to washing machines, the electrical industry has again turned to this source for assistance—and help has been promised. One western university has agreed to institute a scientific study of the electric range from the domestic science angle providing the proper instructor can be found. What is needed is a young woman with both scientific and domestic science training who can supervise and carry out such a series of experiments. With such a self interest return involved, the electrical industry should certainly be able to assist in locating a young woman who can meet the requirements.

Attitude of Sympathy and Confidence Needed

THE West is perhaps more directly concerned than any other single district of the nation in the forthcoming international conference on disarmament which has been called by President Harding at Washington for November 11, 1921, since the discussion of problems pertaining to the Pacific is to be given an outstanding place upon its program.

World conditions as a whole still continue to be far from satisfactory. In view of the magnitude of the devastation with which the world was confronted, we could not expect a very rapid recovery in world trade. What is needed is in some way a curtailment of expenditure by world governments. The immense deficits being faced by every nation, particularly the European powers, so reduce the credit of those countries as to make it impossible for them to pay for the goods they so sorely need.

It is a shocking travesty of civilization that vast expenditures for armament still continue in such proportions as to stagger the ability of the human race to meet the outlay! Here then is a practical way to meet the hour's need for economy—proportionate disarmament. We believe that if the great conference at Washington can approach the solution of this problem in an attitude of sympathy and confidence toward all peoples of the world, that they have it within their power to bring about a lasting

good which will mark an achievement as great as that recorded in the Magna Charta.

The Western Significance of the Chemical Tariff

MUCH has been said recently in the national press on the need for protecting the chemical industry against destructive foreign competition. There have been so many industries of late which had a forced growth during war times and which are now demanding protection in order to continue their existence, and there has been so much loose thinking on the subject of maintaining what is called "favorable" trade balance, that the public is growing a little weary of appeals for help. What we need for the time being is an "unfavorable" trade balance—that is to say, certainly not less goods sold from this country, but so much more purchased from abroad that the various European countries can begin in a measure to cancel their obligations to us. As a general rule what is needed is not protective tariffs, but open markets.

The chemical industry, however, is a case in itself. It is universally recognized that until we have an effective guaranty against future wars, it is a matter of national safety to have an active chemical industry ready at a moment's notice with raw materials and a trained staff for war time needs. We did not have such an industry available when we entered this last war, and it is the lessons which we learned at that time which have taught us to provide for the future. Congress has recognized this fact and has made provision for so protecting the chemical industry that it is assured of a reasonable fighting chance for existence. This is part of the tariff provisions which will go into effect on the first day of January. In the meantime, the Emergency Tariff bars all chemical competition, so that the immediate present is cared for. The Emergency Tariff, however, expires on November 25th. Between that date and the first of the year, there is no tariff at all.

It is not to be expected that foreign countries are not entirely familiar with this situation and will not make proper provision for taking advantage of it. At the beginning of the war there were great stocks of enemy chemicals on hand in this country which were forced into bonded warehouses and have been held since that time awaiting the time when the ban should be lifted. It is said that there is enough for a six months' supply of some of these materials already within the country.

There is at least one growing western industry which would be threatened with extinction by the loss of a six month's market—and there are many others which would feel the competition keenly. We cannot afford to lose hold on the chemical industries which have grown up, fostered by war and post war conditions. One good frost is sufficient to kill a tree of many years standing—and trees are not so easy to start again. If it is worth while to provide for future protection of these industries, they are worth shielding from even a temporary danger.

Western Comment on Current Events

Editorial Notes and Readers' Views on the Outstanding Aspects of Financing,
Trade Promotion, Legislative and Associated Topics that have a
Special Bearing on Western Business

Proposed Washington Tax Revision Investigating Committee Finds General Sentiment Against Extravagant State Expenditures. California Tax System Considered.

Increasing the license fee of corporations, a flat income tax, a commodity sales tax and the wide spread sale of state lands are among the remedies suggested to the Washington committee which is now holding meetings in various parts of the state to consider the possibility of revising the state revenue law.

Of the new sources of revenue proposed for the lightening of the burden on real estate only two, the committee found, could be enacted into law without amending that provision of the constitution requiring uniformity in taxation. These are the commodity sales tax and a flat income tax.

Among the proposals which have received general popular favor during these hearings is the proposal to increase the tax on gasoline to cover all expenditures on state roads, thus relieving real estate of some of its present burden, and also the suggestion that the license fee for corporations be raised from \$15 to \$20 or \$30. The California corporation tax law has also been under consideration, but has met with considerable criticism. At the Aberdeen meeting it was suggested that municipally owned public utilities should be taxed and that the public service corporations then support the state government.

The matter is evidently still in the nebulous state, but the question is a vital one to all business interests in Washington and it needs careful attention. The inequalities and injustices of the California system should not be allowed to hamper development in any other commonwealth, resulting, as it has done in California, in a forced attempt to escape taxes through municipal and political ownership. The Washington suggestion of including publicly owned enterprises under the taxation is one which should be followed through if such a system is seriously contemplated.

More Electric Homes Planned for West Educational Value of Home Electric Appreciated by the Electrical Industry in the Northwest and Intermountain Districts

The Home Electric idea as a means of spreading the gospel of the convenience outlet is finding ready response in all parts of the West and some eight

electrical homes are now under way or are definitely contemplated in different parts of this region. Such an exhibit is now open to the public in Salt Lake City and another in the course of preparation in Denver.

Astoria, Oregon, has done all preliminary work on an electrical home display for which a leading citizen of the community, out of a spirit of civic interest, has donated his home. Contractor-dealers, builders, architects, furniture and furnishing stores are cooperating to make this exhibit a success.

In Medford, Oregon, a committee has made much progress in a preliminary survey and an electrical home is practically assured for this fall. Portland, Salem, Bellingham and Everett, Washington, all have electrical home committees at work. The fundamental educational work thus being carried out is laying an effective basis for later merchandising on an important scale.

Relief for Hawaiian Labor Situation Resolutions Passed by San Francisco Development League Bring Interested Response From Congressional Representatives

Some weeks back the San Francisco Electrical Development League went on record as favoring the importation of sufficient Chinese labor into the Hawaiian Islands to bring about an adjustment of an acute labor situation there. During the recent rise in sugar prices Japanese laborers made such sums of money that many of them have been enabled to return home and others at the present time do not care to work at the prices offered. It is proposed to introduce some fifty thousand Chinese laborers on a definite contract for a term until the situation suspends. The resolutions that were passed by the League were forwarded to all the representatives of the Senate and House who will be interested in the western situation. Many letters have been received from our representatives, particularly one from Representative Kahn, who is heartily in favor of the amendment of the law to permit the admission of Chinese labor to the Hawaiian Islands. Mr. Kahn has stated that the legislation will have to be guarded sufficiently to restrain the immigrants from coming to the mainland of the United States, and also provide for their return to China at the end of their term of service.

In view of the importance of Hawaiian sugar and pineapple products to the industries and markets of the Pacific Coast, the maintaining of the

supply of raw materials and manufactured products from the islands is of general western interest.

Uniform Cost Accounting Not Illegal

Federal Trade Commission Correspondence Indicates Approval of Cost Accounting Work by Trade Organizations When No Price Fixing

That the Federal Trade Commission is strongly in favor of uniform methods of cost accounting as helpful to business is brought out by a correspondence between the manager of the Fabrication Production Department of the United States Chamber of Commerce and Mr. Nelson B. Gaskill, acting chairman of the Federal Trade Commission, recently made public. In defining his stand, Mr. Gaskill says:

Stated in another way, the conception of the Commission is that the efforts of a trade association to educate the individual member in the application of sound principles of cost accounting in his individual business, are proper. But that any subsequent effort of the association to reduce the individual costs to an average or uniform cost basis and to procure the use of the group standard as a basis of price making by each of the individuals in the group, is improper. The individual must fix his own cost and his own margin. The group may not attempt to substitute a group average or standard either of cost or of margin for the individual's figures without being in peril of becoming an unlawful combination.

Applying this statement to your interpretation of our letter of the 25th, it may be said that for a trade association to set up and induce the use by its members of a scientific and accurate plan of cost accounting is not only legal but highly beneficial to the individual members of the association. The use of this legal and highly beneficial information by each individual in establishing his own production cost and determining his own margin, is entirely proper. If thereafter the association attempts to induce its members to disregard their own varying figures and use a common average or uniform figure of cost or margin or both, it has departed from its proper position of instructor and may easily take on the appearance of a price fixing combination in restraint of trade or in suppression of competition.

Such standard cost accounting systems as that of the Electrical Contractors & Dealers Association, which is now in general use among progressive western dealers, are based upon the fundamental principles of accounting and under the above statement of the attitude of the Federal Trade Commission, therefore, meet with its highest approval.

War Finance Body to Loan Vast Sum

Eugene Meyer, Jr., Visits Coast on Inspection Tour Preparatory to Allotting Western Quota of Corporation's \$1,500,000,000

Too much importance can not be placed upon the recent visit to San Francisco and other Western cities of Eugene Meyer, Jr., managing director of the War Finance Corporation, a government supervised organization which stands ready to loan to the farmer, to the cattleman or to the man contemplating a needed industrial development, some portion of \$1,500,000,000.

Although we in the West have not felt the pinch of the industrial depression which has temporarily demoralized farmer and manufacturer alike in the east and middle west, it is good to know that the government stands ready to help us in any commendable expansion we may desire to make. The

money which Mr. Meyer and his associates will loan has not been raised from any charitable or sentimental feeling on the part of financiers and government officials. It was seen that immediate steps must be taken if the business and commerce of the nation were to proceed. The money was raised, Congress sanctioned this plan, and the War Finance Corporation is ready to do business—along business lines.

While undoubtedly large sums of the money will go into Western agriculture and enterprises, Herbert Fleishhacker, chairman of the California Farm Loan Committee of the corporation, sums up the situation in California in the following statement:

"In the judgment of the committee there is not much necessity for loans in this district for the reason that the small country banks have taken good care of their clients * * * In addition it must not be forgotten that California has enjoyed more real prosperity during the last 12 months than any other section of the country, owing to the diversity of its products."

Shipbuilding Is Not Entirely Inactive

Report of Shipbuilding Activities in Response to Demand for Ships in Spite of Surplus of Shipping Board Bottoms

Recent orders for ships amounting to some \$4,000,000 which have been placed by the Munson line indicate the possibility of renewed shipbuilding activity on the Pacific Coast in spite of the forty or more government-owned vessels of different types now idle in San Francisco Bay alone and ready for purchase or lease. That the Munson Company does not feel that these are up to the requirements of modern shipping represents a deplorable situation for the government—but it also indicates a possible future for shipbuilding on this coast.

National Bankers' Convention in West

Los Angeles Gathering Offers Opportunity for Study of Western Industrial and Utility Conditions by National Financial Leaders

A significant gathering from the standpoint of western development is the national convention of the American Bankers' Association which is to be held in Los Angeles on October 3. Following the convention, the delegates will visit other parts of the West.

There was a time when the financing of public enterprises depended entirely upon the East for support. Large blocks of securities are now readily absorbed in the West as recent events have proven, and banking institutions will do well to study the West's industrial expansion at this time.

If there is one agency which is to be credited with the stability of American industry since the war, it is the American bank and its system of control. The Journal of Electricity and Western Industry welcomes the leaders of this department of business to the Pacific Coast, knowing full well that even short acquaintance will lead to later participation in the upbuilding of this great empire.

Letters to the Editor

Seattle Is Facing Hopeful Industrial and Power Situation for 1921

To the Editor:

Sir: Popular belief throughout the Northwest is to the effect that there has been an unusual slump in industrial activities during 1921 over 1919 and 1920. A careful study of conditions in and around Seattle shows that this is not the case. Interest throughout the Northwest merely needs stimulation.

Speaking broadly it can be said that the power industry in the Pacific Northwest is facing a hopeful situation. Seattle is the center of trade, commerce and industry in this region and the conditions in Seattle are typical. The power situation in an industrial sense is strong. The first six months of 1921 show a five per cent decrease in the Seattle district over the same period of 1920, but for the month of July 1921, the decrease over July 1920 is only one per cent. In other words, the general improvement is so strong that conditions are not only better than normal, but are almost up to the peak of industrial power demand in 1919 and 1920.

A few comparative figures on the usual business barometers will show how well Seattle and the Seattle district has held up in its every day activities, despite the popular belief that an abnormal slump had occurred.

The year before the war, 1913, was a typical pre-war year. It was a better year than 1914, so it is quite fair to make comparison with that period. The result is surprising when it is shown in face of the fact that lumber, a basic industry, was at a standstill in January 1921, and had only reached 75 per cent of normal at the end of August.

Seattle bank clearings for the first six months of 1913 were \$316,349,134.63; \$806,051,090.94 for the same period in 1918; \$1,101,177,130.27 for the first six months of 1920 and \$733,712,913.07 for the first half of 1921.

Bank deposits for the same periods of the same years were: \$81,664,856.45, \$150,827,847.79, \$173,623,125.89, and \$142,712,913.07.

The number and value of building permits for the first six months of 1913, 1918, 1920 and 1921, respectively, were as follows: 4875—\$5,219,470; 5703—\$5,315,025; 5296—\$7,908,455 and 5754—\$6,111,545. Permits for July of this year totaled \$2,217,270 an increase of more than 100 per cent over July of 1920.

Postoffice receipts have shown a steady increase with no marked decreases. The first six months of 1913 the total was \$626,281.74; the first six months of 1918 the total was \$984,752; for the same period of 1920 the total was \$1,103,138.91 and for the same period of 1921 the total is \$1,066,070.16.

Seattle's commerce for the fiscal year ending June 30, 1921, led all the coast cities with a total for goods dutiable and goods in bond, imports and exports, being \$290,743,130. The comparative table for the first six month period in each year is as follows: 1913—\$49,921,548; 1918—\$370,405,352; 1920—\$354,981,180 and for 1921—\$161,302,239.

In 1913 the street railways had no jitney competition to overcome and but little competition from the private automobile. Gross revenues rose from \$1,739,047.90 for the first half of 1913 to \$3,130,628.42 for the first six months of 1921. Elimination of free riders and fare increases accomplished this, however, but it is remarkable that in

spite of the competition noted traffic has not been materially reduced over the figure reached in the pre-war, pre-jitney and automobile period.

Passengers carried in the first six months of the years 1913, 1919, 1920 and 1921, respectively, were: 39,181,393; 47,213,081; 50,432,236 and 37,779,559. The years 1919 and 1920 were the years of Seattle's greatest industrial activity and were naturally high peaks in street railway traffic.

It can be seen that the Northwest has more than held its own since the cessation of war activities. Lumbering is resuming on a better and more substantial basis, and while coal mining has been at a standstill since March, the business barometers show that Seattle, the center of the Northwest, has passed through no very marked business slump. It is not at the peak of war times, to be sure, nor can it be expected to maintain such a standard of industrial activity. Business, however, is better by all the standards of measurement than in the very good pre-war year of 1913. The whole district has forged ahead and is now well on the up-grade toward another era of marked prosperity.

ALTON W. LEONARD,

President

Puget Sound Light and Power Company

Quality and Reliability of Lines With Good Salesmanship Get Results

To the Editor:

Sir: An amusing and at the same time exasperating occurrence which actually happened in a large dealer's store recently may do something toward stimulating interest and activity among the dealers at the present time. At least it is worthy of thought.

A lady came into the store, where several well known makes of electric irons were on display, with the view, undoubtedly, of purchasing one. Inquiring of the salesman, who had proceeded somewhat indifferently to wait on her, as to the quality and price of the different makes of irons, she was told that there was very little difference in either quality or price. The salesman presumably intended to convey the impression that she could not lose in any case. He was the loser. It is needless to say that the prospective customer left the store without making a purchase.

It is self evident that selling methods which were apparently successful in 1919 and 1920 will not get the dealer very far nowadays.

We have always felt that there were a limited number of underlying principles in merchandising, which would ultimately lead to success for the jobber as well as the dealer, and have attempted to shape our policies to this end.

The foundation of the average successful merchant, is the quality and reliability of the lines he distributes. Then couple this with sane and proper distributing policies, and you have the basis for a successful business. We never take on any line until we feel that we can back it up to the limit, which we always proceed to do. We consider it a wonderful asset to tie to lines of this kind, as we know of no better way to build our good will. We believe and preach this same idea to our dealers, and our observation has been that those who have followed such a policy consistently for any length of time have been conspicuously rewarded. Vacillating policies and lines rarely ever bring success to anyone. Every merchandiser should have something to sell and then proceed to sell it. The organization that stocks assorted and supposedly popular lines of merchandise, with the view of taking orders for them, is on the wrong track entirely. There is no business I know of that needs real salesmen more than the electrical business.

In conclusion, we believe concentrated effort on quality lines of merchandise, will largely dissipate the so-called "Buyers Strike" which will soon be justly termed, if we are not careful a "Sellers Strike".

C. B. HALL,
Secretary-treasurer

Illinois Electric Company, Los Angeles

Development of Early Hydraulic Fill Dams Outlined by Pioneer

To the Editor:

Sir: Realizing that the Journal of Electricity and Western Industry has always been interested in forwarding the achievements of Western engineers, I desire to call attention to an apparent misunderstanding of the situation in regard to the design and evolution of hydraulic fill dams which occurred during a discussion of a paper by Allen Hazen before the American Society of Civil Engineers. In a letter published in the Transactions of the society, Mr. George L. Dillman has said: "the writer would call Mr. Hazen's attention to one mis-statement of fact. Messrs. Schuyler and Howells were not, as he states, pioneers in hydraulic dam construction. The Chabot or San Leandro Dam was built before they were ever heard of, and was largely hydraulicked."

The following material was taken from a contribution from G. H. Wilhelm, chief engineer and general manager of the East Bay Water Company, Oakland, California: "The writer would like to correct statement of Mr. Dillman that the Chabot, or San Leandro, dam was built largely by hydraulic fill method." (The San Leandro dam is the property of Mr. Wilhelm's Company). "This dam was built by dry fill process. After the dam was completed some material was sluiced on the down-stream toe, no attempt being made to restrict or classify the sluiced material.

"The writer believes that Mr. J. M. Howells is the pioneer in hydraulic fill dam construction, having designed and built three dams of this type before Mr. Schuyler entered the field. These dams were the Tyler Texas dam in 1894, La Mesa dam in 1895, and the Crane Valley dam in 1899-1900."

Mr. Wilhelm then quoted Mr. Schuyler's publication in 1897 in support of his points, in part as follows: "A novel and exceedingly interesting type of dam is that built in the spring of 1895, designed and constructed by J. M. Howells, C. E., president of the San Diego Flume Company and is located on the Mesa eight miles northeast of San Diego. The materials were deposited in place by flowing water. The experience which led up to the construction of La Mesa dam was obtained by Mr. Howells by building a dam in Tyler, Texas, by the same method in 1894."

Mr. Wilhelm, himself, is an expert in hydraulic fill dam building and in the analysis of its asbtruse problems. He is now just completing for his company, the San Pablo dam, one of the great hydraulic fill dams of the world, and it has been in use during the latter half of its construction.

Another member who endeavored to contribute to the discussion was P. E. Harroun, Consulting Engineer, 58 Sutter Street, San Francisco. Mr. Harroun, as you know, is of mature training and judgment as an engineer and careful and scholarly in his statement of facts. He says in part:

"I have noticed the statement of Mr. George L. Dillman, M. Am. Soc. C. E., in which he calls Mr. Hazen's attention to what he calls a mis-statement of fact, saying: 'Messrs. Schuyler and Howells were not as he states, pioneers in hydraulic dam construction. The Chabot or San Leandro dam, built before they were ever heard of, was largely hydraulicked.' "

"If Mr. Dillman considers that any embankment or dam which has any of its material placed by water carriage is 'hydraulic dam construction' he is right, for this method was in use by California miners from early times.

"But if the term 'hydraulic dam construction' is used in its ordinary sense as accepted by hydraulic engineers, that is the carriage, segregation and placement of material in a dam which will have two pervious stable outer sections or embankment with an impervious central core, then I think Mr. Dillman's statement is not proper.

"Mr. Dillman cites the San Leandro dam as a hydraulic construction placed 'before they were ever heard of.' Records show that this dam was originally built in the ordinary method and that of its original yardage, 82,967 cubic yards were 'puddle heart wall, selected materials built in compact layers,' and 'main embankment, 1000 feet hauled by carts 322,909 cubic yards.' The water tightness, stability and safety of this dam was secured through construction by the ordinary methods adopted for the building of earth dams.

"Afterwards 122,000 cubic yards were sluiced in, being deposited against the lower toe and greatly flattening the lower portion of that slope as shown in Fig. 2B, page 1037 and 1039, Am. C. E. Pocket Book. It seems to me to be entirely improper to call this structure a hydraulic fill dam.

"The first true hydraulic fill dam known was, I believe, the dam at Tyler, Texas, which was 575 feet long, 32 feet high and contained 24,000 cubic yards. (vide Schuyler on Dams) This dam was designed and built in 1894 by J. M. Howells, M. Am. Soc. C. E., now consulting engineer of San Francisco. Prior to that time Mr. Howells, in 1892-3, had designed and was building an earth dam 1250 feet long and 95 feet high at Santa Fe, New Mexico. The writer was resident engineer in charge of construction on the work at Santa Fe and during this time Mr. Howells repeatedly discussed with the writer the problems pertaining to the hydraulic fill type and some experimental work in sluicing and also in hydraulic segregation of materials was carried on.

"I think there is no question whatever but that the dam at Tyler, Texas, built by Mr. Howells in 1894 is the first true hydraulic fill dam ever built.

"Following the dam at Tyler, Texas, Mr. Howells built La Mesa dam by this method in 1895 and Crane Valley dam in 1899-1900. The hydraulic fill method was used in the repair and enlargement of the Lake Francis dam by Messrs. Howells and Schuyler in 1901-5, they being mutually associated on this project.

"Up to the time of the work on the Lake Francis dam, 1901-5, Mr. Howells was entirely alone in the adoption and development of this method. After the time of the Lake Francis work by Messrs. Howells and Schuyler this method came into more general use. It seems to me that in justice the credit for early adoption and development of this method should primarily lie with Mr. Howells and then with Mr. Schuyler and that others should follow and not precede."

Mr. Schuyler's book shows a cross section of La Mesa dam built 26 years ago; from which it is apparent that (although hampered by scarcity of material) I had then clearly in mind and executed in practice, the acknowledged principals of hydraulic fill dam construction as it is understood today. These principals were the segregation and emplacement of earth, sand, gravel, and even rocks in their proper position so as to constitute a dam and as evidenced by Mr. Hazen's recent paper and its discussion, La Mesa dam section (except the top finish) for that height of structure and for the materials used is still the proper section.

J. M. HOWELLS.

Consulting Engineer, Great Western Power Company,
San Francisco.

Builders of the West

PRESIDENT, that is the word that thrills the heart of every American youth at some stage of his life, be he thinking of the presidency of the United States or that of some large business concern. Such thoughts must have run through the mind of John Rutherford Millar when he was a boy in Oakland but it is doubtful if he ever conceived of being the guiding spirit of an organization whose membership numbers over a thousand California manufacturing firms. Today at the age of 34 he is president of the California Manufacturers' Association, one of the most powerful and at the same time helpful leagues of its kind in the West.

Yet while giving the major portion of his time to the progress and welfare of the California manufacturers, he is the general manager and vice-president of the California Cotton Mills, the only industry of its kind west of the Mississippi river.

Mr. Millar was born in Oakland, January 23, 1887. His father had been one of the founders of the cotton mills. He received his education in Oakland schools and later went to the Municipal School of Technology at Manchester, England, a branch of Victoria University. He began his business career in 1909 as assistant superintendent at the cotton mills. Since 1915 he has been vice-president and general manager of the company. His plant employs 1200 people and produces the greatest variety of products of any single cotton mill in the world. The commodities, which are made from cotton, hemp, flax and jute, include duck, canvas, filter cloth, twine, rope, napkins, damask, towels, comforters, batting, burlap and many allied products which find markets over the entire United States besides the Hawaiian Islands and the Philippines. Factory branches are maintained in Los Angeles, Denver, Seattle and New York City. Electricity plays a major part in the manufacture of the various products and countless motors furnish the motive power to drive the looms, carders and spinning machines.

It is the California Manufacturers' Association however which occupies the largest portion of his time and interest. Mr. Millar was one of the five men who conceived the organization in 1918. Since that time he has been the president and guiding spirit of the association, which has grown from a



JOHN R. MILLAR

Head of the California Cotton Mills, who, as president of the California Manufacturers' Association, is the guiding spirit of over a thousand industries in 155 cities of the state.

few members until now a thousand manufacturers in 155 California cities belong.

The work of the association has gradually broadened in scope until now, with its thirty departments, it furnishes information and service of almost any nature to its members. Included in the departments are:

- Accident Prevention
- Advertising Methods
- Americanization of Foreign-born Employees
- Buying at Home
- Compensatory Insurance
- Development of Natural Resources
- Employment Methods
- Fire Insurance
- Foreign Trade
- Free Ports
- Industrial Scholarships
- Interurban Motor Carriers
- Labor Relations
- Legislation, National and State
- Merchant Marine
- Merchandising Plans
- Patent and Trade-mark Regulations
- Taxation
- Trade Acceptances
- Traffic Rates and Practices
- Vocational Training
- Welfare Work

- Profit Sharing Plans
- Resale Price Maintenance
- Safety Devices
- Salesmanship Methods
- Shop Efficiency Systems
- State Constitution (New)

In other words, there is no branch of manufacturing activity which does not come within its scope. The organization stands for all that is best in cooperative effort and comprising, as it does, the major industrial plants of the state, is a powerful factor in furthering western development.

There is one achievement which carries the name of John M. Millar which stands out as one of the forward steps in California industrial history. It is the welding together of fifty of the important industrial organizations of the state into the California Industrial Council, thereby eliminating wasteful overlapping of work and providing a compact and powerful defense for industry in the state and national capitals.

If he has any spare time, it is devoted to one of his three hobbies, golf, motor boating or fishing.

So to John Rutherford Millar, pioneer in the unifying of California manufacturers, who with his youth, his devotion to the West and his quiet way, promises even greater achievements, this issue of the Journal of Electricity and Western Industry is affectionately dedicated.

The Development of Power by Municipalities Is Inflexible

A Discussion of the Relative Aspects of Development of Hydroelectric Power by Municipalities and by Privately Owned Public Utility Companies Under Regulation

BY EDWIN O. EDGERTON
President of the East Bay Water Company

THE discussion as to the relative merits of municipal development and distribution of hydroelectric energy, as contrasted with such development and distribution by privately owned public utility companies under regulation is bringing out for consideration many aspects of the problem not heretofore adequately considered.

One of these aspects which is of importance is the relation of consumers of electricity to the electric supply. We may lay down as a premise that electric service will not be completely satisfactory unless there be at all times readily available to each consumer service in such amount, and of such character to fit his particular needs. Rates, of course, are important but are not finally controlling. It is idle to enlarge upon the benefits of low electric rates if the service is not available.

Much confusion has occurred in the loose use of words such as "municipal ownership," "public ownership," and "government ownership."

Municipal and Government Ownership

Municipal ownership and operation of a utility service is confined to a separate distinct group of people organized as a city, or possibly as a municipal corporation such as an irrigation district and the operation of a public utility service by such a group for the sole use and benefit of the people constituting this group, with no regard to outside communities or individuals.

Government ownership on the other hand imports the idea of a governmental unit sufficiently large to embrace all of the people, such as a state or the nation. Particularly must this distinction be made because of the modern status of electric service where, except in very minor instances, the service has outgrown the boundary of any city or group of cities and has spread over great portions of the state so that any adequate consideration of public ownership must include operation by the state itself.

For instance, it would not seriously be considered that even the largest city in California (Los Angeles) could take over and operate the public utility electric company which operates through Southern California and whose service is only ten per cent within the boundaries of that city. Neither could the county of Los Angeles successfully operate this business because a large amount of service is given in other counties. Therefore the only governmental unit sufficiently comprehensive would be the state.

National Operation of Utilities

There are certain aspects of the electric power situation which involve service from given points

of generation throughout as many as seven states and here is an operation which of necessity must be performed (if to be done publicly) by the national government.

Short of the complete governmental development and distribution of electric power without discrimination as between consumers and which must at all times be ready and able to produce service to any and all consumers when and as needed, there is no form of governmental interposition in the power business which could possibly give satisfactory service.

Municipal Development Selfish

A municipality in seeking to develop electric power from sources outside of its boundaries must of necessity act selfishly. The only method of financing such development is through the issuance of municipal bonds. Naturally citizens who are called upon to vote such bonds require the assurance that a specified minimum amount of power will become available for the sole use of the city or its citizens to the exclusion of all other consumers, and it cannot be maintained that a city having an opportunity to seize and hold power rights on mountain streams will take only so much as will result in its receiving a fair proportion of power to be developed considering all other municipalities which may thereafter desire to make like developments. The fact is that a city acts for its own interests and seeks to secure for itself not only power sufficient for its present needs but for such needs as may be expected in the future and does so without any consideration whatever for other municipalities or other consumers.

Furthermore the participation by a municipality or a number of municipalities in the development of a given stream would undoubtedly result in a definite allocation to each government entity; and once fixed this allocation would be inflexible, there being no governmental agency to make any adjustment based on the needs of all power consumers. Once a city obtained rights and developed power on a stream there could be no hope thereafter of a division of such power between such city and other consumers no matter how great the needs of such other consumers might be.

Equal Distribution Impossible

The only way in which hydroelectric energy could be developed by municipalities in fairness to all present and prospective consumers would be for the cities to develop power which would be available at all times for distribution to consumers both inside and outside of city boundaries and this, as has been shown, is a practical impossibility.

No city nor group of cities would invest municipal funds in a power enterprise and risk the possibility and probability of having to share the power developed with any consumer, present or prospective, who might thereafter need service.

If a city did this it might, and probably would, find itself in a position after investing municipal funds, that its power supply would be seriously cut in order that consumers outside of the city be given service, with the result that the city's enterprise would be unremunerative unless the city went into the general power business and sold power to the outside consumers and this, as has been suggested, is an impossible conception as a municipal enterprise.

Public Utilities Elastic

As contrasted with this, the public utility under regulation provides complete elasticity and is an agency through which, without discrimination, all consumers may receive service when and as needed, no matter where located, provided, of course, they are within a practicable distribution area.

A public utility company must at all times be ready to give service, not only to old consumers, but to new consumers who desire to be attached to the system. Regulation does not permit of any favoritism of one locality over another in the matter of service and the development of electric power by a public utility company cannot be made for any given locality but must be made for the benefit of all consumers within a reasonable distribution area.

The truth of what has been said becomes apparent when we consider the proposed development of electric power on the Colorado River and here what has been said about municipal development would apply equally to state development.

Colorado River Serves Seven States

On the Colorado River there is a possibility of developing energy to be distributed in at least seven states and it may fairly be said that the development of this energy should be made with a comprehensive consideration of the needs of the consumers in all of these states. No one city, no group of cities, and no one state has a right to claim all of this electric energy as it must be distributed fairly throughout the southwest.

For any city or group of cities or for any state to obtain rigid and perpetual rights to definite amounts of power on the Colorado River would create the inflexible condition which has been shown as impossible if service is to be given to all consumers.

In the first place there is no reasonable basis upon which a definite allotment could be made to each governmental unit and if an allotment was made either upon an arbitrary basis or a basis of population or on a basis of present consumption, this allotment would definitely restrict development as to those great areas which will undoubtedly be developed but which will have received no allotment because of their present unorganized condition.

Furthermore, such an allotment must of necessity contemplate future needs as well as present and if made on that basis would, as to some areas now

sparsely settled, hold out of use electric energy for a long period of time at great economic loss.

Furthermore, most of the governmental units which might seek an allotment at the time of the division of power rights on the Colorado are wholly unprepared to develop and use such power and have no present thought of going into the power business.

Public Utility Adequate Agency

On the other hand, the public utility company under regulation affords a remarkable adequate agency for the logical development of power and the distribution of energy fairly and equitably among the consumers as they present themselves wherever located.

There need be no definite allotment of power to any given community as the power company would develop power in logical steps, keeping somewhat in advance of demand but seeking always to prevent heavy investment for power development which for long periods would remain idle because of a lack of demand. Under this scheme the public, with no financial risk except as it may invest in the securities of the company, will obtain electric energy at times and in quantities to suit the needs of consumers and all of the citizens of all of the states are assured of non-discriminatory treatment and a division of the power fairly and equitably made under governmental regulation and free from the rigid inflexible dedication of definite amounts of power to any given community or state.

Water Power Act Forwards Development

Lack of satisfactory Federal laws would seem to have had a restrictive effect on the development of the country's water power resources, judging by the record of activity under one year's operation of the new water power act. Up to June 30, 1921, there had been filed with the Federal Power Commission 229 applications aggregating 14,675,000 horsepower and affecting 33 States, the District of Columbia, and Alaska. This amount is 75 per cent greater than the entire water-power development of the United States today. It is 50 per cent greater than the combined water-power resources of Norway and Sweden, and considerably in excess of the combined resources of France and Italy. It is five times greater than the aggregate of all applications filed with the Federal Government in the preceding 15 years. The projects applied for vary in size from less than 100 horsepower up to the three million horsepower scheme of the Southern California Edison Company on Colorado River.

In the West, where the great bulk of the applications originate, this stimulus has been reflected in the activity of the electrical industry as a whole and in continued industrial development. While in some sections of the country electrical interests did only 60 per cent of their normal business during 1920-21, western companies report substantial increases. This condition is attributed almost entirely to the carrying out of the West's power program.

Banker's Advice on Financing the Small Industrial Plant

At What Stage of Your Business Should You Go to Your Banker for Assistance and What Is the Extent of the Help He Can Give You? Suggested Methods of Obtaining Capital and Credit

BY F. R. KERMAN

New Business Department, Bank of Italy, San Francisco

LIKE Charity, good cooking and clean hands—the proper financing of small industrial plants “begins at home”. For, after all, the job of financing his business is something that the proprietor, partners or manager must do, and all the banker or financier can undertake is intelligent co-operation.

From this it appears that the task cut out for the management of a small enterprise bent on securing financial aid resolves itself into two departments: 1. Getting his house in order. 2. Obtaining the banker's assistance. Decidedly the more important is the first, and it is this part that carries the load in any financing plan. When the house cleaning has been done, and the particular enterprise under consideration put into adjustment, the other part becomes relatively simple. Moreover, unless this local renovation is accomplished, there is little that any one can do—except give advice.

Strangely enough then, this discussion will start with the banker's part in the operation, and move backward to a consideration of what the plant management itself must do. This method is followed in order that it may be more apparent how financing plans are actually evolved, and because it is always easier to work from the answer back through the various stages in any problem. In pursuing this reverse process, it must be kept in mind that the business is assumed to have its house in order, and that the problem is strictly limited to the nature and scope of the assistance it is possible to extend through proper financing plans. Later the treatment will revert to the methods and procedure adopted by the business management in laying the foundation for successful financing.

An acquaintance may or may not exist between the banker and the principals at interest in the industrial plant. If such an acquaintance has been formed, that much is done; if not, an effort should be made to secure a creditable introduction through some individual of unquestioned standing. That out of the way, the banker is naturally interested in knowing how his institution may be of assistance, and if it can safely undertake the performance of any service. The situation then comes to an explanation on the part of the business representative that financial aid of some sort is needed; the nature and extent of the financing to be determined by the banker.

Bear in mind that the business whose financing is about to be considered, comes to the banker with clean skirts. Its financial statement is foreordained to prove satisfactory, the moral risk is good, and after some conversation with the management, it

appears that the banker has reached the point where the only thing to be determined is the financing plan itself. Here is the banker's first thought: “What kind of assistance does this business need, and what can this bank do to cooperate in its provision?”

The Banker Loans, Not Invests

In finding the answer to this question, the banker is performing his function as a unit in the process of industrial financing. But before an accurate decision can be reached, several collateral problems must be solved. Does the business need more capital, or is it legitimately entitled to seek temporary help? Perhaps the management should attempt to secure the permanent investment of funds. It must not be expected that the bank will supply working capital for development purposes, and if the banker is of the opinion that more capital is what the situation demands he is, financially at least, out of the picture. It may be that he can help in interesting outside capital, and work with the management in devising an appropriate plan of procedure, but he must demur when there is even a remote possibility of jeopardizing depositor's money in furnishing permanent capital for the conduct of business. Of course, the banker may feel that money conditions are unfavorable for the acquisition of additional capital, in which case he will frankly say so. If, however, the matter appears possible of accomplishment, he should as frankly give his opinion.

Legitimate Methods of Obtaining Capital

Expansion in business is usually a case for increased capital, especially with small institutions. However, the very fact that the enterprise is small, makes the work of financing a subject of particular interest. Most industries of this character are in the main local, tapping a relatively limited territory—and, as a general rule, providing a limited service. The distribution of stock is therefore of primary local concern. It is a matter of experience that financing of this sort has been most successfully accomplished when the stock is sold to local capitalists, or investors, employees and customers.

Frequently underwriters or brokers do not care to bother with the small issues put out by purely local industrial plants—especially if the business is a new one just incorporated, or one with but brief experience. In such cases the management may wisely—with proper counsel—undertake the distribution of stock. If this is done, care should be exercised in providing enough capital to answer necessary requirements as well as working capital. The retention of control should be carefully determined

in advance, and if desirable to keep it in the hands of the promoters, both common and preferred stock should be issued. It is the part of wisdom for the promoters—who are the ones at interest in a small institution—to control operations for the first few years at least. If a large number of stockholders is desirable, then subscription lists should be circulated, each list headed by the name of a well known local man. In any event, a descriptive folder of some sort will be necessary, and in this connection the small enterprise cannot afford to overlook what the larger successful institutions have already learned, namely, the preparation of a well worded, concise prospectus. It will pay in the long run to have this drawn up by the best experienced financier available, regardless of what he may charge for his work. Selling stock through the medium of a prospectus is a highly specialized form of salesmanship, and should not be attempted by a novice.

Employee and Customer Ownership

The sale of stock to employees has been successfully accomplished by cooperative companies,—and a surprisingly large number of small organizations are financed in this way. The chief thing required in promoting such stock distribution—and the subsequent welfare of the enterprise,—is a strong, capable directing head. The actual sale of stock is accomplished in much the same manner used in selling to other individuals—except that it is on a more personal and intimate basis. There is, of course, always the danger in a concern whose stock is held by the employees, that factional troubles will arise, jealousy creep in and because of the very fact that control is so widely distributed, the management may be overthrown. This danger, however, is usually confined to new ventures.

Selling stock to customers is a rather uncertain venture, though the cooperation of customers in other financial plans is not at all uncommon. The use of orders for future delivery is widely practised, such orders forming the basis for bank credit.

These are, briefly, some customary methods of financing the small enterprise,—especially of industrial character—where capital addition or acquisition is essential. But not all cases are provided for in this manner. More capital is not always desirable or obtainable.

The Proper Use of Trade Credit

Let it be assumed, therefore, in this instance, that increase in capital is not necessary and temporary help is the only thing required. The banker finds he is confronted with the necessity of determining exactly what plan will best fit the situation. Is there sufficient basis for making a straight loan; should it be a collateral loan; will it be for 30, 60 or 90 days; are the bank's funds in proper condition to warrant the loan (if it is a small bank); does the policy of the bank accord with this procedure? Perhaps he finds, after careful scrutiny of conditions, that sufficient use is not being made of trade credit.

A great many organizations—(and especially small industrial institutions, whose management may be vested in skilled engineers or manufacturers,

without thorough knowledge of other subjects)—fail to make sufficient use of trade credit. It may appear to the banker, as he proceeds with his examination, that the answer to the difficulty lies in the neglect of legitimate means of financing. Often trade creditors are willing to extend additional time on maturing obligations or—in cases where proper use of deserved credit has not been made—the plant management will find that it can secure terms from those to whom the subject has not been broached. Notes of relatively small denomination, due serially, are frequently used in this connection.

Considerations Which Decide the Loan

The banker, reviewing mentally the several courses open to him, makes his selection of the most practical means, and gives his answer to the applicant. It is pertinent to point out at this time, that in making his decision, all of the possibilities must be weighed against each other, and the probable results estimated, if the financing were undertaken following each of the suggested methods. The financial statement of the concern at interest is, of course, the foundation from which the banker starts. This information is supplemented by special trade reports, obtained perhaps from half a dozen different sources. Every angle of the situation from which a new light may be obtained, is carefully investigated—and finally the whole is placed in juxtaposition with the general business situation in other lines, so that better perspective may be obtained.

Often from this minute examination of his client's business, it is possible for the banker to suggest the adoption of certain changes in the actual management of affairs, so that the benefit resulting is not confined alone to the subject of financing plans. A rather startling number of practical business men have learned new wrinkles in manufacturing and marketing from their bankers.

So much, then, for the banker's part in the plans. They represent the first step in launching new financing—and are of tremendous importance but, as previously indicated, if the ground work isn't properly laid before the matter reaches the banker, there is not much that he can do to make dollars replace horse sense.

Other methods of financing may be devised, such as the flotation of bond issues or collateral trust obligations, in which the ingenuity of practical men of experience is quite astonishing. However, the outline here prepared in more or less sketchy fashion will not reasonably permit of a more exhaustive consideration.

And now the situation swings back from the final solution to the earlier stage of the problem: the manner in which a business must adjust and prepare itself for embarking upon a financing plan. As pointed out in the earlier paragraphs of this discussion, the success of the venture is really determined during the preparatory period. The important steps in "housecleaning" which any business must undergo before it is in a position to ask for outside financial assistance will be discussed in a later article.

Electric Furnace Possibilities in the Western Iron Industry

An Analysis of the Opportunities Open to the Electric Furnace in the Western Iron Industry, with Data on Costs, Accuracy of Control and Flexibility Which Indicate its Advantages in this Field

BY R. C. GOSROW
Consulting Metallurgist

THE electric furnace as a piece of metallurgical apparatus has demonstrated many advantages over other apparatus for the production of steel and steel castings. And more recently, in the production of iron mixtures, the electric melting unit has proven its adaptability.

Wider Field for Electric Furnace

When the electric furnace was initially utilized for the production of iron for castings, the schedule usually followed was to melt down gray iron or white iron scrap, and not replenish the melt in any constituents. But with the high price of gray iron scrap and its frequent scarcity in some localities, metallurgists turned their attention and efforts to the melting of steel scrap, building up the carbon, manganese, and silicon for the desired grade of iron to be produced. On the other hand, when scrap of high sulphur and phosphorous contents was melted, these elements were removed by basic refining to produce a melt sufficiently low to meet the requirements for a better grade of castings. There are now electric furnace units regularly producing iron for castings of many variable compositions.

Electric Furnace Practice for Different Irons

In the electric furnace production of iron, pig or castings metal, we may classify the several commercial irons as follows:

1. Pig steel containing 2.2% up to 3.0% carbon, silicon under 1.0%, manganese under 0.30%, sulphur and phosphorous within the required limits.
2. Foundry irons, consisting of the several grades of iron used for castings, based on the silicon ranges, with the sulphur and phosphorous as required by the foundrymen.
3. Steel making pig irons, consisting of: low phosphorous, basic, Bessemer, etc., and washed metal. All such irons containing 3.0% to 4.0% carbon, with silicon as required for basic or acid process, and the sulphur and phosphorous depending on the utilization.

Generally these grades of iron are produced from the ore direct in blast or electric furnaces, but in small plants, and even large plants in the West, low grade steel scrap may be so utilized in a melting unit as to produce such irons for casting and steel making uses. The processes and methods of producing the various irons in the electric furnace for pig or castings may depend on:

1. Availability of the raw materials.
2. Cost of various raw materials for melting scrap.
3. Cost of labor—skilled and unskilled.
4. Production—tons per month or per week.
5. Grades of iron desired in the cast metal.
6. The melting unit already existing in the foundry—if such.

The following is a resume' of the processes:

1. Cold melting of foundry iron scrap, adding alloys cold with the charge in the furnace.
On an acid hearth.
On a basic hearth.
2. Cold melting of steel scrap, adding alloys when melted in the furnace.
On an acid hearth.
On a basic hearth.

3. Cold melting of steel, making pig, adding alloys when charge is melted, and adding in the furnace.
On an acid hearth.
On a basic hearth.
4. Finishing hot cupola metal, adding alloys cold or hot in the furnace.
On an acid hearth for high silicon irons.
On a basic hearth for low silicon irons.
5. Finishing melted steel charges, adding alloys cold or melted in the furnace.
On a basic hearth.
On an acid hearth.
6. Cold melting of steel scrap, on a basic hearth and producing washed metal of four grades.

sulphur	0.010	0.015	0.020	0.025
phosphorus	.010	0.015	0.020	0.025

 Processes one to five are for casting metal, and process six for pig metal.

Advantages of the Electric Furnace

The electric furnace iron possesses marked properties over the cupola metal, which may be listed as:

- Increased density of the iron castings—specific gravity 2 to 5% greater.
- Increased compressive strength.
- Increased transverse strength.
- Increased hardness (slight) and toughness, due to increased density.
- Electric furnace iron always shows a closer grain for the same silicon content than the cupola metal.

The utilization of an electric furnace for producing iron castings develops many economies and advantages over a cupola:

- Small electric furnace units (1 ton) have greater daily capacity over small cupola units. (18 and 24 inch)
- Flexibility of the operation of the electric furnace, allowing changes in composition from heat to heat.
- Smaller floor space required with the electric furnace, because heats may be taken off periodically during the day.
- The elimination of purchasing choice and often high priced scrap.
- The ability to use cheaper scrap, and a more plentiful supply.
- The accurate control of the bath when in the furnace.
- All heat units are supplied from one source—electric energy—thus eliminating the large coke charges needed for the cupola.
- The flexibility of the plant, so that steel and iron castings may be produced from the same electric melting unit. The foundry is capable of producing its own recarburizing metal, and wash metal.
- A 30-inch cupola is the smallest economical unit to install producing 30 tons in 10 hours. A one ton electric furnace will operate more economically than its capacity equivalent, a 24-inch cupola.

Accurate Control Possible

It is well established that the electric furnace is readily adaptable to the production of iron for castings. As iron in combination with 3 or 4 per cent carbon has a lower melting point than iron with 0.20 to 0.50 per cent carbon, the economies of the electric heating may be realized. The control of the heat unit input prevents excessive and wasteful use of the electric energy. The controllable atmosphere of the melting and refining periods eliminates excessive metal oxidation and loss of alloys, decreases the silicon and carbon losses, and eliminates the sulphur pick up which is a factor in cupola melting. Flexibility of composition is often of great importance in a modern foundry, especially a foundry operating in a district where much machinery is manufactured and a jobbing business done. The electric furnace is a scientific piece of metallurgical apparatus, and properly controlled and regulated is capable of producing the highest quality of metal.

Electric Furnace Costs

The cost of producing a metal is an important factor in its history. The following costs represent July 1920 conditions in the Western United States for producing electric furnace iron from iron foundry and steel scrap. While these costs are not absolute for every location, they represent a condition at a time and a place and their relative values are of importance. The materials and labor represent the

PRODUCTION COST ESTIMATE TO PRODUCE ONE NET TON OF GRAY IRON IN THE LADLE—IRON SCRAP.

1. Analysis of iron desired.
carbon 3.20 to 3.75%
manganese 0.25 to 0.40%
sulphur 0.040% max.
phos. 0.055% max.
silicon 1.75 to 2.25%
2. Furnace capacity, and metal production.
one ton, 3-phase furnace—8 tons per 10 hours.
three ton, 3-phase furnace—20 tons per 16 hours.
3. Power capacity of furnace.
one ton furnace—500 kva.
three ton furnace—750 kva.
4. Scrap melted—all iron, no steel.
silicon 1.75 to 2.25%
sulphur 0.065% max.
phos. 0.080% max.
5. Basic hearth.
6. Estimate follows:

Item	Unit Cost	Furnace 1-ton	Capacity 3-ton
No. 1 Iron Scrap	\$45.00 N. T.	\$392.00	\$972.00
Limerock	4.00 N. T.	.80	2.00
Fluorspar	25.00 N. T.	.60	1.50
Carburizers (average)		4.80	12.00
Ferro Manganese 78%	5c. lb.	3.20	8.00
Ferro Silicon 50%	5c. lb.	24.00	60.00
Power (cold melt) 450 kw-hrs.	1.5c. kw-hr.	54.00	135.00
Electrodes (graphitized)	23c. lb.	27.60	69.00
Linings (new)		12.00	16.00
Linings repairs		10.45	14.00
Ladle lining		2.00	4.00
Ladle drying and heating		2.50	6.00
Furnace tools		2.00	5.00
Labor, including metallurgist and supt., chemist, furnace and scrap yard labor, unproductive pay- roll charged to furnace		26.35	87.19
Depreciation of furnace equipment 10% yr.		6.00	11.65
Amortization of investment in 10 years.		6.00	11.65
Interest at 7% annually		5.20	8.16
Insurance .....		.20	1.80
Totals.....		\$579.70	\$1424.95
Per net ton....		72.50	71.20

This estimate does not include carrying charges on raw material in stock, or market risks on the product..

PRODUCTION COST ESTIMATE TO PRODUCE ONE NET TON OF GRAY IRON IN THE LADLE—STEEL SCRAP

1. Analysis of iron desired.
carbon 3.20 to 3.75%
manganese 0.25 to 0.40%
sulphur 0.040% max.
phos. 0.050% max.
silicon 1.75 to 2.25%
2. Furnace capacity and metal production.
one ton, 3-phase furnace—8 tons per 10 hours.
three ton, 3-phase furnace—20 tons per 16 hours.
3. Power capacity of furnaces.
one ton 500 kva.
three ton 750 kva.
4. Scrap melted—all steel, no iron.
carbon .15 to .50%
5. Basic hearth.
6. Estimate follows.

Item	Unit Cost	Furnace 1-ton	Capacity 3-ton
Steel scrap, turnings, punchings, shearings, \$15 N. T.		\$132.00	\$418.00
Fluxes, etc.		1.50	4.00
Carburizers		5.60	14.00
Spiegel (carburizer and manganese)	1.75c. lb.	6.30	14.00
Ferro Silicon 50%	5c. lb.	30.60	76.00
Power (cold melt)..... 500 kw-hrs. at 1.5c. kw-hr.		50.00	150.00
Electrodes (graphite)	23c. lb.	27.60	69.00
Linings (new)		6.00	8.00
Linings repairs		6.00	8.00
Ladle repairs		2.00	4.00
Ladle drying and heating.....		2.50	5.00
Furnace tools		2.00	5.00
Labor as previous estimate, chargeable to furnace production and operation		26.35	77.00
Depreciation, amortization, interest, insurance, etc.		17.40	20.00
Totals....		332.55	\$872.00
Per ton....		40.75	43.60

This estimate does not include carrying charges on raw materials in stock, or market risks on the product.

prices for such commodities, when operating with part skilled men and part unskilled common labor.

Uses of Electric Furnace Iron

Electric furnace iron is now being cast in the following machinery uses;

- High pressure steam valves and fittings.
- Superheated steam valves and fittings.
- Locomotive cylinders.
- Internal combustion engine cylinders.
- Internal combustion engine piston rings.
- Hydraulic intensifier castings.
- Hydraulic pumps and rams.
- Machinery parts exposed to heavy compressive and transverse stresses.
- Chemical and metallurgical equipment for non-corrosive metal mixes

Iron is strongest under compression and weakest under impact. The electric furnace product has demonstrated increased values for these properties. Cupola iron in the arbitrary test bar under a transverse load of one and one half tons, will give a deflection of 0.10 inch; while electric furnace iron under a transverse load of two and one quarter tons shows a deflection of 0.115 inch. The specific gravity of the electric furnace is from two to five per cent greater than cupola iron.

Economical Methods of Operation

In an iron foundry built and operated along modern lines, an electric furnace unit may be operated most economically on steel scrap charges. Part of the heat may be poured for steel castings, and the balance built up and poured for iron castings. In changing from a heat of iron to a heat of steel, it is not necessary to flush out the furnace. Add the charge as usual and proceed.

In a foundry where a cupola furnace is installed, two mixtures may be used. A melt of steel may be made in the electric furnace and a melt of iron in the cupola furnace. Then the cupola melt may be added to the steel furnace melt in the steel furnace and a melt of malleable iron produced, having lower carbon and lower silicon contents. These mixtures may be very closely calculated and anticipated results obtained. The original malleable heat may be made entirely in the electric furnace, but where a cupola is available it works out nicely, at the same time eliminating idle equipment. A small cupola, of course, could function in this duplexing process.

The Field for the Electric Furnace in the West

There is probably no greater utilization of the electric melting unit than in the ferrous industries. The experience and skill of the metallurgical operators is of course necessary, as also the skill and experience of the plant operators, to carry out the work of the metallurgical staff. But an electric furnace requires about as few skilled men for the work it performs and the advantage it possesses, as does any piece of metallurgical apparatus used in iron and steel production.

With the increase of available electrical energy on the Pacific Coast, and throughout the United States in general, electric furnace units must eventually replace all other forms of melting and refining for steel and iron. Their metallurgical advantages, and economic features of operation will fix their status.

How Can the Executive Keep in Touch with Plant Economy?

Diagrammatic Method of Recording Results in the Operation of a Steam Electric Power Plant Offers the Executive a Comprehensive and Accurate Means of Determining Operating Efficiency

BY C. H. DELANY

Assistant Engineer of Operation, Pacific Gas and Electric Company

WITH the cry of less waste and more economy ringing on every side and the date for the exhaustion of the country's oil supply set to occur within the next quarter century, there is a definite need among executives of electric power companies and other industries where oil burning plants are in use, for a quick and accurate method of determining plant operating efficiency.

In oil burning electric power plants it is customary to report the economical operation of the plant in terms of kilowatt hours generated per barrel of oil. This is an excellent way of comparing one day's operation with another, provided there is a steady load on the plant and other conditions remain the same. With a variable load such as occurs in an ordinary central station, it has been found that operation is much more economical at periods of heavy load. Thus it is possible with a fairly heavy load to secure from 250 to 260 kw-hr. per barrel of oil without difficulty, whereas with the same plant operating at a light load, it may be difficult to secure more than 150 kw-hr. per barrel.

A mere statement of the kilowatt hours generated per barrel of oil means very little to the executive who must secure at a glance a comprehensive idea of the operation of the plant. If, for instance, the daily report should show that 258 kw-hr. per barrel of oil were generated, whereas on the corresponding date of the previous year but 250 kw-hr. per barrel was obtained, the executive would be in no position to judge whether the actual efficiency of the plant had improved or not. Even if the report were to show the total generation for the day, he would still be at a loss to determine which record showed the best results.

How then can he be kept informed of results in such a way as to give him the greatest amount of accurate information with the least expenditure of his own time? If a statement of the kilowatt hours generated per barrel of oil burned is useless as a report of efficiency some new method must be devised. The information should include both the efficiency obtained during the day in question and that of other days during previous years.

Fixed Standard Necessary

A fixed standard must be adopted for the comparison of the various results from each plant on a common basis. In forming such a standard a theoretical value may be taken which would represent the best results obtainable, that is, a standard based on tests with all machinery in perfect operating condition, and conducted in such a manner as to procure the highest efficiency attainable. Instead of this, the standard adopted may be taken as simply

the average results obtained by the plant in a given period of time. Either standard would prove satisfactory provided it is thoroughly understood by all concerned. In comparing the actual results with the standard, a certain percentage will be determined. Thus, if a theoretical standard is adopted which can never actually be reached in practice, then the actual results obtained may never be more than 70

or 80 per cent of the standard. If, on the other hand the standard is determined simply as the average of previous results, then the actual results will vary above or below the 100 per cent mark.

Assuming that the standard to be adopted is derived from the average results obtained at the plant during the preceding year, it is necessary to evolve a method of computing such a standard. In determining this average, it must be remembered that the kilowatt hours generated per barrel of oil varies greatly with the load on the plant so that any comparison would only be fair if the load on the plant was equal to the average load that occurred during the previous year.

Diagrams Essential

In order to allow for this effect of differences of load on the plant economy, it is necessary to plot a characteristic diagram for the particular plant of the type shown in Figure 1. In this diagram, each point represents one day's operation and shows the kilowatt hours generated and the oil burned for that particular day. By drawing a line through these points it is possible to determine a very fair average of the oil burned for any given load. The line then may be used to determine the standard for any given load. For example, if the load on the plant

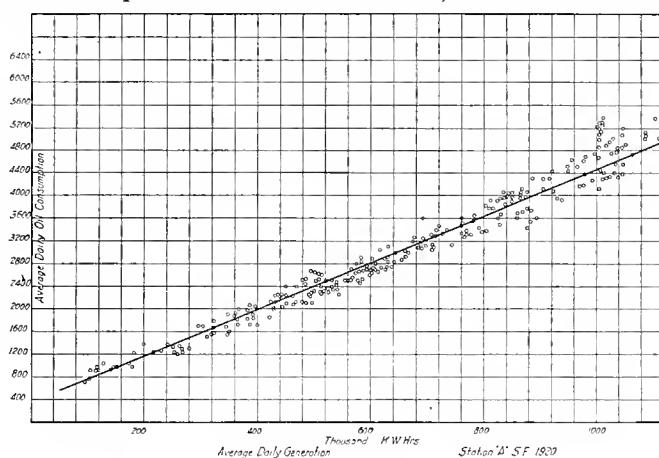


FIGURE 1.

Showing method of determining a standard based on results obtained from operation of a plant over a period of a year

amounted to the generation of 800,000 kw-hr. during the day, it is found that the diagonal line on the diagram crosses the vertical line representing 800,000 kw-hr. at a point which represents 3640 barrels of oil.

With this standard determined, the percentage of standard, or "Operating Efficiency" for the day in question may at once be calculated. For example: during one day's operation there were generated 919,000 kw-hr. and 4320 barrels of oil were burned, representing an economy of 217 kw-hr. per barrel. From the diagram, it is found that for a load of 919,000 kw-hr. with standard efficiency there would be burned only 4,150 barrels of oil, or the equivalent of 224 kw-hr. per barrel, as against the actual result obtained of 217 kw-hr. per barrel. The operating efficiency is therefore 217 divided by 224 or 97 per cent. During another day's operation there were only 75,000 kw-hr. generated and the oil burned was 600 barrels, equivalent to 125 kw-hr. per barrel. From the diagram it is found that for 75,000 kw-hr.

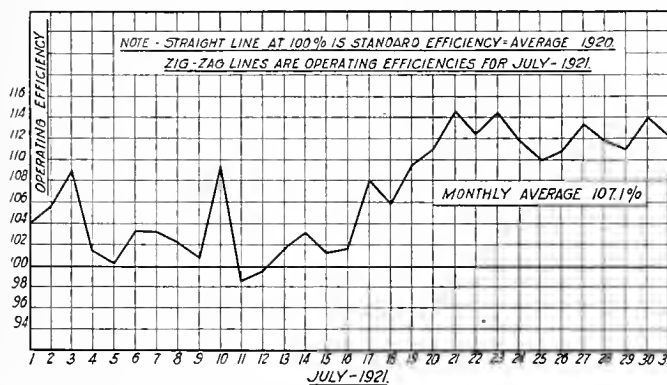


FIGURE 2.

Showing operating efficiency for plant plotted for every day in the month with monthly average also determined

with standard efficiency, the oil consumption would be 660 barrels, equivalent to 114 kw-hr. per barrel. The operating efficiency is therefore 125 divided by 114 or 110 per cent. Thus in the second case it is noted that while there were 125 kw-hr. generated per barrel of oil, as against 217 kw-hr. in the first case, the operating efficiency was actually higher in the latter instance.

It is evident from the above that if an operating efficiency of 100 per cent is obtained, the economy of the plant is the same as the average for the previous year. If the operating efficiency is more than 100 per cent, it is evident that the results obtained are better and vice versa. It is obvious that this method of determining operating efficiency does not take into account inefficient machines and for a standard based on actual results obtained in a plant, old fashioned turbines are liable to make as good a showing as up-to-date machinery.

System is Concise

By adopting this system of reporting results the executive can tell at a glance whether his plant is improving or running behind. In reporting the operating efficiency, the use of further diagrams will add materially to the value of the system. By the

use of a diagram as shown in Figure 2, the operating efficiency for each plant may be plotted for every day in month. Thus it can be readily determined which days of the month show an improvement and which a falling off in efficiency. The general trend of efficiencies during the month is also clearly indicated. Again, the average operating efficiencies for each month may be plotted on a diagram similar to Figure 3. This shows the gradual trend during a

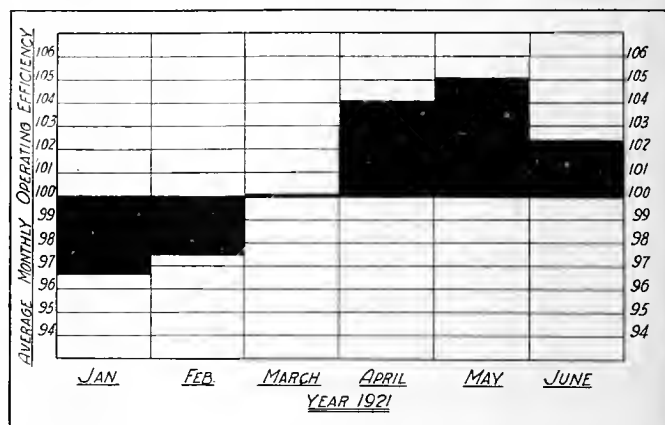


FIGURE 3.

Showing average monthly operating efficiencies plotted for six month period with gradual trend clearly indicated

period of six months. By referring to such a set of diagrams the executive can readily see which month or which day shows a loss in efficiency and which an increase.

Another Method

Operating efficiency may also be reported in a brief tabular statement such as Figure 4.

This has the advantage that in addition to giving the operating efficiency, it shows all the impor-

PACIFIC GAS AND ELECTRIC CO. WEEKLY EFFICIENCY REPORT							
Division	Station	Week Ending _____ 1921					
		Sun.	Mon.	Tues.	Wed.	Thurs.	Frid. Sat. Average
K.W.H. Generated							
Oil Used, Bbls.							
Oil Required, Std. Bbls.							
K.W.H. per Bbl. Actual							
" " " Standard							
Operating Efficiency							
Capacity Load Factor							

FIGURE 4.

Showing tabular method of recording operating efficiency, at the same time giving additional information valuable to the executive.

tant items entering into the daily records. Load factor, the total power generated, and the total oil used, together with the other items are so interrelated that a report of all of them is necessary for a complete understanding of the economical operation of the plant.

It is only by adopting some such method as the two described above that the executive can keep in touch with the vital factors affecting the economic operation of his plant. Oil consumption and oil economy can no longer be neglected as they were at the time crude oil could be purchased for fifty cents a barrel.

Alarm Systems Offer Opportunity for New Wiring Business

Details of Equipment and Apparatus in the Installing of Burglar Alarm Systems Which Will Enable the Electrical Contractor to Stimulate Business During a Slack Period by Opening Up a New Field

BY E. R. MURRAY

Supply Specialist, Western Electric Company

IT IS not within the scope of this article to embrace the many and diverse burglar-alarm systems which are devised by manufacturers; but rather to point out to the contractor-dealer the lucrative field in this direction, and to explain in some detail three or four systems, so that he may go into that field armed with data and arguments which will enable him to initiate such business.

Fundamentally, there are three general systems for burglar alarms; the Open Circuit System, the Semi-Closed Circuit System and the Closed Circuit System. Contractor-dealers are more or less familiar with some of these systems, but because of the many improvements and changes in apparatus and methods, it is felt that a brief review of the circuits involved, together with a description of the latest apparatus will be of value.

It is obvious that where life and valuable property are at stake, only the best grade of signal devices should be considered; cheap door-bell wire and apparatus of like quality is an actual menace to life and property, where dependence is placed on them for alarm and protection. The property owner wanting a "cheap" system can not be considered a desirable customer, and the contractor-dealer would do well to refuse to put in such a system, for, by accepting the contract, he would be inviting constant trouble, not to mention the risk of losing his customer.

The Simple Open Circuit System

As the name implies, this constitutes a circuit where the apparatus is on open circuit; the window springs, door springs, floor treads and other circuit-closing devices are connected in multiple, the operation or closing of any one of which will complete the circuit and operate the alarm. It is essentially nothing more than a door-bell circuit and about as dependable. The circuit-wiring is not electrically "supervised" in any manner; i. e., no current is flowing in the circuit, the interruption of which would cause an alarm of some sort, apprising the owner that the system is out of order. Consequently the system is liable to be inoperative when the emergency calls for its functioning. Open circuit non-supervised systems are justifiable only where minimum expense is the controlling factor, and where daily and even more frequent testing of the circuit is done; but even in these instances no guarantee can accompany the installation.

Mention of the open circuit system is made here principally to bring out the weaknesses, and to emphasize the necessity for recommending a more dependable protection. A conscientious physician who knows what he is about, does not permit his

patients to dictate the nature of the prescription, and the same relation of dependence should be insisted upon between the reliable contractor-dealer and his trade. If a contractor-dealer cannot command that dependence in his ability, particularly when it concerns the selection of apparatus for the protection of life and property, he would do well to refuse the work.

The Semi-Closed Circuit System

A far greater degree of dependability is found in the so called semi-closed circuit system. Figure 1 shows the circuit arrangement. The contacts, milliammeter, relay and battery are in series on one circuit; the alarm gong, relay-closing contacts and transformer (or Edison battery where reliable a. c. current is not available) are on the other circuit. Short-circuiting switches are provided for at entrances to the building or other points so that doors and windows may be opened through the day without the sounding of the alarm gong. These short-circuiting switches must be under lock and key or hidden effectively. The milliammeter is introduced into the circuit in order that the inspector or owner may know at a glance the condition of the closed-circuit battery.

Although this system insures the operation of one part of the circuit (the closed contactor unit), it does not insure the positive operation of the alarm gong circuit—which in itself is nothing more than an open circuit. This circuit could be broken, or the gong "short-circuited," and in this case, the operation of the contactors at windows or doors would not result in any alarm. Then too, the alternating current supply might fail, or this circuit be cut purposely.

However, a great deal more dependence can be placed in the semi-closed circuit system than in the open circuit system; and again, where cost is a controlling factor, this system may be recommended. But when this system is installed, its limitations should be fully understood and every precaution taken to lessen the liability of derangement of circuits. For instance, the alternating current supply should be wired in conduit, as well as the gong circuit, and the apparatus cabinet (mounted in basement) should be of substantial metal and under lock and key, making it extremely difficult for anyone to tamper with the wiring or apparatus. The battery cabinet should be locked securely and conduit run between this and the apparatus cabinet.

The semi-closed circuit system is adaptable for installing in residences, warehouses, mercantile establishments, small factories, garages, etc. The

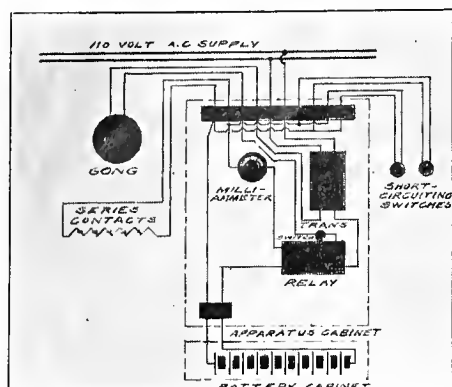


FIGURE 1.

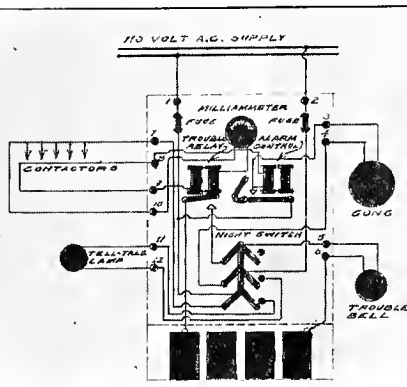


FIGURE 2.

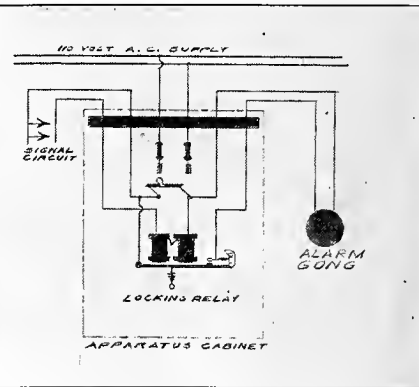


FIGURE 3.

Diagrams representing the semi-closed circuit system (Fig. 1), the closed circuit system (Fig. 2), and the open circuit non-supervised day hold-up protection system. The diagrams are self explanatory and the details of apparatus and the layout of the installation are explained in the text.

present cost of apparatus, including wire and cabinets for an average lay-out, will run from \$175 to \$200, depending, of course, on local conditions.

The Closed Circuit System

Figure 2 shows the wiring diagram of a closed circuit system. This system is for protection by day, against hold-up, as well as protection by night against burglary. It is recommended for banks, jewelry stores, trust companies, and other establishments where large sums of money are kept or where valuable merchandise is stored.

The portion of the circuit enclosed in the illustration by dotted lines, shows the apparatus mounted in a steel cabinet. This cabinet is locked securely; it houses the relays, milliammeter, switches and terminals, and prevents the apparatus from being tampered with. Circuits leading out of the cabinets are:

1 and 2 leads to power supply—usually 110 volts a.-c. Terminals 3 and 4 lead to signal alarm gong or other signaling devices; 5 and 6 lead to trouble bell; 7, 8, 9 and 10 lead to signal stations, such as foot-switches, door switches, window springs, secret push buttons; 11 and 12 to tell-tale lamp.

With the system on closed circuit, it will be noted that the side of the power mains designated as 1 goes through the blade of the switch, thence through the signal stations which are bridged across the line, thence through the milliammeter, trouble relay, back again to the signal stations, thence through the alarm controller relay and gong, then back to the switch, through the switch and back to 2 of the power mains. With the circuits in this condition, there is not enough current flow to operate the alarm control relay or ring the gong (due to the high resistance in the winding of the trouble relay). The trouble relay is always closed when the circuit is in "operating" order. If this relay is not closed, the trouble bell will ring, as will be noted by following out the circuit. When one of the signal stations is operated, this shunts the milliammeter and high resistance trouble relay, permitting sufficient current to flow to operate the alarm control relay, the armature of which locks up, bridging the signal gongs or other alarm devices directly across the line.

As the system is generally cut off at night (temporarily) to prevent the accidental sounding of the alarm by janitors, a night cut off switch is provided in the control cabinet for this purpose. Disconnect-

ing the system by operating the night cut off switch will instantly light the tell-tale lamp, apprising the proper parties that the system is inoperative.

Along with this compact and self-contained apparatus cabinet, the manufacturers have developed an ingenious "Bank Tellers' Foot-rail Contactor;" a slight movement of the foot sends in the alarm without knowledge of the robbers. This foot-rail switch is sectional and can be installed so as to provide a semi-continuous foot-rail under all counters or cashiers' desks. Of course, the alarm gongs are located beyond hearing distance of the bank; in the majority of towns provision can be made for their installation in the police station, fire-house or telephone offices.

A system of this sort installed will vary a great deal in cost, depending on local conditions, and on whether or not the apparatus and wiring is installed at the time the building is put up or afterward; but the cost of the apparatus for an average job will run about \$500.00 to \$700.00, including wire and conduits. This figure represents the contractor's cost.

Open Circuit Hold-Up Protection Systems

Although this system is not as reliable as the closed circuit system just described, it can be installed in cashiers' cages in mercantile establishments and other places where sums of money are handled. The circuit should be tested at regular intervals, preferably every morning. Figure 3 shows the diagram of connections; the apparatus cabinet, under lock and key, houses the locking type relay, fuses, switch and terminals. The alarm gong continues to ring until the relay is released manually within the cabinet. Such a system can be installed complete, including labor, for about \$250.00.

No attempt has been made to cover all the dependable systems designed and recommended by different manufacturers; it has been the purpose of the writer simply to describe briefly the weak and strong points of some of the latest forms of protection, and to emphasize to the contractor-dealer the judgment he should exercise when making recommendations for the protection of life and property.

There exists a tremendous potential business in this field and when the old stand-by, "house-wiring", is dull, this presents a fertile and remunerative business for the progressive electrical man.

Study Course

A University Accounting Course for the Contractor-Dealer and the Business Men in the Small Industrial Plant

BY PAUL B. KELLY

LESSON XIV—THE STANDARD ACCOUNTING SYSTEM—THE CASH RECEIVED SHEET

The Cash Received Sheet is designed as a means of summarizing the data on all transactions that involve a receipt of cash. By means of this form, the bookkeeper is enabled to make at the end of each month a single set of entries which reflect in the ledger accounts the effect of all cash receipts. The Cash Received Sheet differs from the Sales Recapitulation Sheet and the Voucher Disbursement Sheet in that it summarizes the data recorded on two forms whereas each of those two sheets summarize only one. The two forms which the Cash Received Sheet summarizes are—The Cash Receipt Tags and the Cash Sales Tags.

Listing the Cash Receipt Tags

The manner in which the Cash Receipt Tag is used and filled in for recording all receipts of cash other than cash received from cash sales, was explained in Lesson No. 3. The chart shows two Cash Receipt Tags on which payments made by customers on account were recorded. Each Cash Receipt Tag could be journalized individually. The journal entry required by any Cash Receipt Tag to register the effect upon the general ledger accounts of any transaction which is properly recorded on this form, would be one of the following three entries:

DEBIT	CREDIT
1. Cash	1. Accounts Receivable
2. Cash	2. Accounts Receivable
Cash Discount Allowed	3. Some general ledger account other than Accounts Receivable.
3. Cash	

Each cash receipt tag is not individually journalized for that would entail a prohibitive amount of work. Instead, the Cash Receipt Tags are summarized on the Cash Received Sheet and are posted to the general ledger by monthly totals. It is very easy to summarize the data on Cash Receipt Tags for only four columns are needed. The Cash Received Sheet, as shown in the chart, is provided with the four columns, "Bank," "Cash Discount Allowed," "Accounts Receivable," and "General Ledger." The manner in which the data recorded on the Cash Receipt Tags are transferred to the Cash Received Sheet is graphically explained by the chart.

The date of the Cash Receipt Tag and the name of the person from whom the cash was received are transferred to the Cash Received Sheet and placed in the columns headed "Date" and "Name" respectively.

The amount of cash received is entered in one of the columns entitled "Bank." Two "Bank" columns are provided because of the possibility that deposits may be made to more than one bank account. Usually the contractor-dealer keeps only one bank account and therefore, only one of the "Bank" columns probably will be used.

The amount of cash discount, if any, allowed to the customer is listed on the same line in the "Cash Discount Allowed" column.

In the "Accounts Receivable" column is entered the amount which is to be credited to the customer's account in the Accounts Receivable Ledger. If no cash discount was allowed to the customer, the amount entered in the "Accounts Receivable" column should be equal to the amount that was entered on the same line in the "Bank" column. If, on the other hand, the customer was allowed a discount for cash, the amount entered in the "Accounts Receivable" column should be equal to the sum of the amounts entered on the same line in the "Cash Discount Allowed" and the "Bank" columns. Note the procedure in the chart.

If the receipt of cash recorded on a Cash Receipt Tag was received for some purpose other than as a payment by a customer on account, the amount of cash received is entered in the "Bank" column in the usual way but the corresponding entry is made in the "General Ledger" column. The chart shows such an entry.

Listing Cash Sales Tags

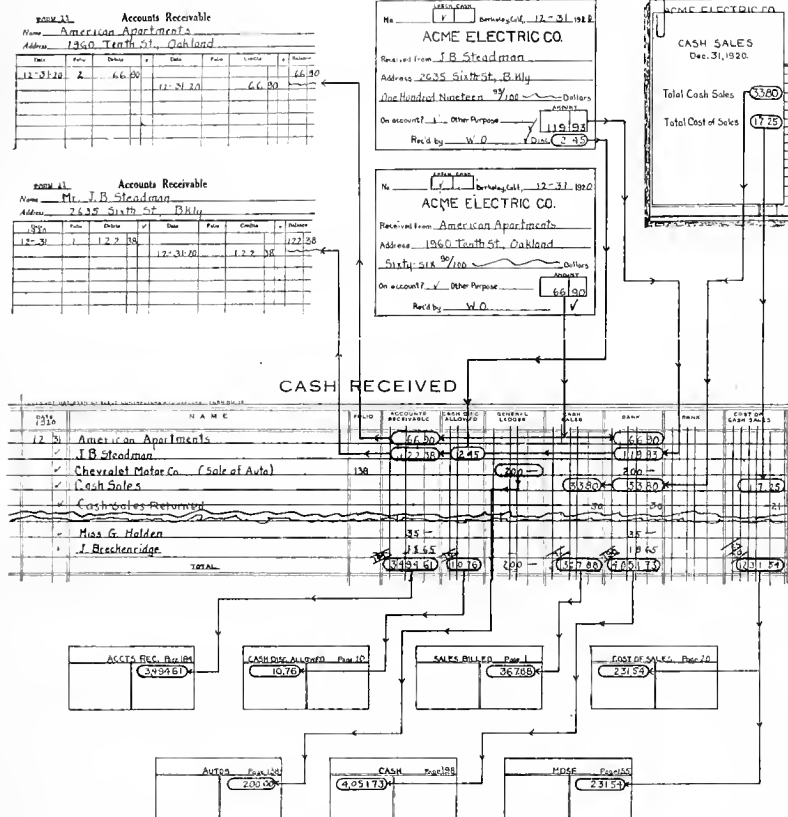
Lesson No. 3 explained the manner in which cash sales are recorded on Cash Sales Tags. A packet of Cash Sales Tags is shown in the chart.

Each Cash Sales Tag could be used as the basis for a journal entry, thus:

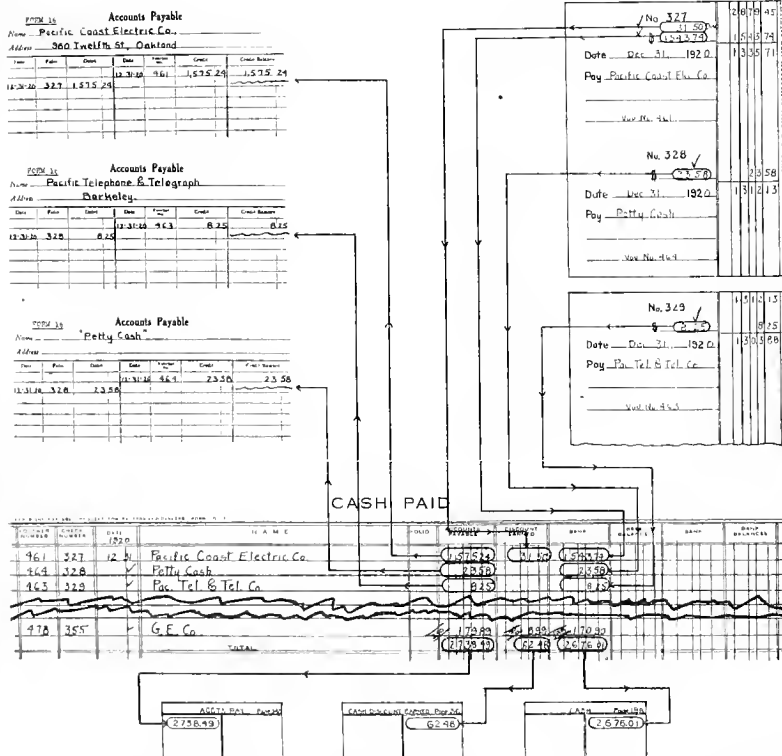
DEBIT	CREDIT
a. Cash	a. Sales Billed
b. Cost of Sales Billed	b. Merchandise

Each Cash Sales Tag is not recorded in the books by a separate journal entry; neither is each Cash Sales Tag listed on the Cash Received Sheet. Instead, the daily totals shown by the slips on the packets of Cash Sales Tags are entered on the Cash Received Sheet, as illustrated by the chart.

The daily total of cash sales is entered in both the "Cash Sales" column and the "Bank" column. The daily total cost of the Cash Sales is entered on the same line in the column headed "Cost of Cash Sales." This column is not provided on the Cash Received Sheet furnished by the association, but should be added.



The use of the Cash Received Sheet is here illustrated. Follow each process from the sales tag to the journal



The Cash Paid Sheet is similarly explained by tracing a transaction through its various entries

Journal Entries on Cash Received

The totals of the Cash Received Sheet are carried forward from one sheet to the next until at the end of the month, totals of each column are available. They may be made the basis of a formal entry in the journal. If the totals shown by the Cash Received Sheet are entered in the journal before being posted to the general ledger, the form of the entry required to journalize these totals would be the one shown below:

DEBIT

4,051.73 Cash
10.76 Cash Discount Allowed
231.54 Cost of Sales Billed

CREDIT

Accounts Receivable 3494.61
Sales Billed 367.88
General Ledger (Auto Acct.) 200.00
Merchandise 231.54

However, it is easier and quicker to enter the totals directly to the general ledger accounts as illustrated in the chart. Care should be taken that no part of the complete entry is omitted. The numbers of the pages to which the totals are posted should be noted on the Cash Received Sheet as shown in the chart.

Each amount entered during the month in the "General Ledger" column must be individually posted to the proper ledger account. For example, the amount shown in this column on the chart was posted directly to the "Auto Acct." As the individual items in the "General Ledger" column are posted in the general ledger, the ledger page number should be entered on the same line in the "Folio" column of the Cash Received Sheet. Entries in the "General Ledger" columns are not numerous.

Observe that on the Cash Received Sheet, the sum of the totals of the "Bank" and "Cash Disc. Allowed" columns should equal the sum of the totals of the "Accounts Receivable," the "Cash Sales," and the "General Ledger" columns. This should be used to prove the accuracy of listing, distribution, and addition before posting to the ledger.

Posting Cash Receipt Tags to Ledger

Before the Cash Receipt Tags are filed, they should be posted to the credit of the various accounts in the Accounts Receivable Ledger in the manner described at length in Lesson No. 3. As each Cash Receipt Tag is posted, the amount entered in the Accounts Receivable Ledger should be compared with the amount listed in the "Accounts Receivable" column of the Cash Received Sheet, in order to prevent any discrepancy be-

tween the Accounts Receivable Ledger and its controlling account. Notice that the Cash Received Sheet provides the means by which the total credit which is posted once a month to the Accounts Receivable Account is obtained.

Cash Sales Returned

It is sometimes necessary to refund in cash the amount paid by a customer on a cash sale. A transaction of this kind is rare and can be most practically handled by recording the item returned, the cost, and the amount of cash refunded on a Cash Sales Tag. The transaction should then be entered in red ink on the Cash Received Sheet as illustrated by the chart. Another way of handling this item would be to subtract it in calculating the daily totals placed on the slip on the packet of Cash Sales Tags. If this was done, it would not be entered separately on the Cash Received Sheet.

The Cash Paid Sheet

The Cash Paid Sheet is the simplest of the four special sheets used to summarize the preliminary data. The Cash Paid Sheet summarizes the data recorded on the check stubs so that with a single journal entry, the combined effect on the general ledger accounts of all the checks written during the month may be registered thus, depending on whether a cash discount was received:

DEBIT	CREDIT
Accounts Payable	Cash
or:	
DEBIT	CREDIT
Accounts Payable	Cash
	Cash Discount Earned

Notice that whenever a check is written, the Accounts Payable account is the account that in every instance is debited, a direct consequence of the voucher system. This voucher system requires that before a check is written, a bill or a memorandum voucher shall have been received and listed on the Voucher Disbursement Sheet and posted in the Accounts Payable Ledger. Every check written is posted to some account in the Accounts Payable Ledger and also to the debit of the corresponding controlling account in the General Ledger.

By examining the Cash Paid Sheet shown in the chart, you will see that this sheet provides the columns necessary to classify the data on any check. Separate columns are provided in which the check number, the date, and the name of the payee are to be listed. The voucher number of the bill for which the check is written in payment, is entered in the column provided for this purpose. The chart illustrates how the data on the check stubs are distributed.

The amount for which the check is written is entered in the column headed "Bank."

The amount of discount earned, if any, is listed on the same line in the "Discount Earned" column.

The total amount to be debited to the creditors' account in the Accounts Payable Ledger is entered in the "Accounts Payable" column. If a cash discount has been earned, the amount entered in the

"Accounts Payable" column will be equal to the sum of the amounts entered on the same line in both the "Discount Earned" and the "Bank" columns. If no discount is received, the amounts entered in the "Accounts Payable" column and in the "Bank" column will be the same.

An extra "Bank" column is provided in case accounts with two banks are maintained. If only one bank is dealt with, this column will not be used.

The "Bank Balances" columns on the Cash Paid Sheet are intended to be used for carrying forward daily the balance of cash in the bank. In these columns, the deposits and the daily totals of the checks written may be entered and the net bank balances calculated each day. However, if the bank balance is carried forward on the check stubs as described in Lesson No. 4, the use of these columns will be unnecessary.

Observe the fact that the total shown by the "Accounts Payable" column should equal the sum of the totals shown by the "Discount Earned" and the "Bank" columns. This fact should be used to prove the accuracy of the work.

The Journal Entry for the Cash Paid Sheet

The monthly totals of the columns on the Cash Paid Sheet may be entered in the journal and from there posted to the ledger. For instance, the totals shown by the Cash Paid Sheet in the chart might have been used in making the following journal entry:

DEBIT	CREDIT
2,738.49 Accounts Payable	Cash 2,676.01
	Cash Discount Earned 62.48

However, a saving of time may be effected by posting the totals of the columns of the Cash Paid Sheet directly to the general ledger accounts in the manner illustrated by the chart. Notice the ledger page numbers on the Cash Paid Sheet.

Posting the Check Stubs

Each check stub should be posted to the debit of some individual account in the Accounts Payable Ledger. The Cash Paid Sheet should be in view when these postings are made in order to make sure that the amounts entered in the Accounts Payable Ledger correspond to the amounts entered in the "Accounts Payable" column of the Cash Paid Sheet. The monthly total of the "Accounts Payable" column on this sheet constitutes the monthly debit to the controlling account.

Residences Follow Car Lines in Bay Cities

A significant comment on the importance of transportation to city growth is to be seen in the fact that in the four cities clustered together on the east side of San Francisco Bay, 3353 residential building permits were issued during the 18 months ending June 30, 1921, and of these 85 per cent were within three blocks of street car lines. The estimated cost of this 85 per cent was \$15,030,412 as against \$1,433,355 for those not within three blocks of a car line.

Western Dealer, Jobber and Agent

Business building suggestions for the store—
Distribution and warehousing methods—
Advertising and sales promotion ideas

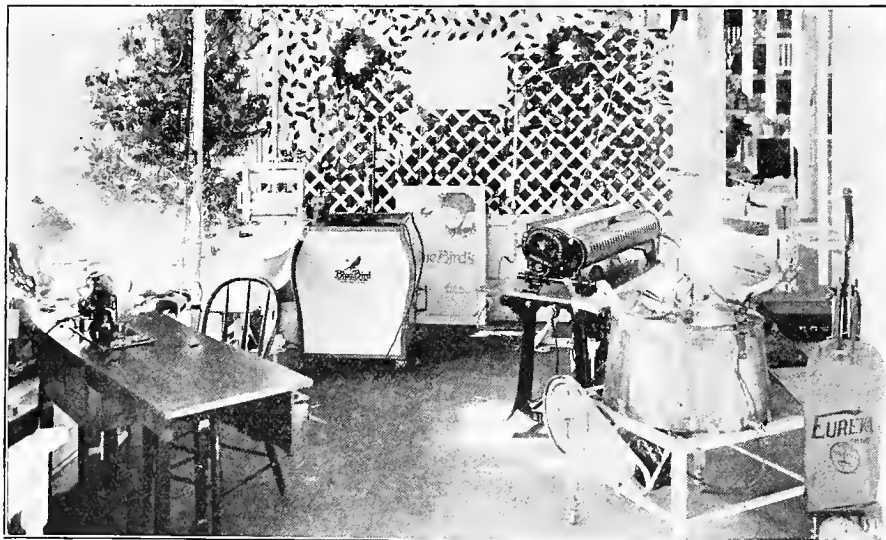
Space in Free Market Utilized for Display Booth

Enterprising Fresno Dealer Gets Big Returns from Model Wash Room Installed in City's Largest Market

Utilization of a booth for displaying electrical appliances in the free market at Fresno, California where thousands of housewives daily purchase their provisions, has added materially to the sales of the Valley Electrical Supply Company. Opened originally during a campaign for a popular make of washing machine the popularity of the booth progressed at such a rate that at the

Both the washer and ironer attracted much attention with resulting sales. The booth was so arranged in the front of the market that it faced a large window and often pedestrians were attracted inside. In addition to the sales results the advertising benefits were many.

Later a second type of washer was installed together with a vacuum



Model wash room installed in the Fresno Free Market by the Valley Electrical Supply Company which attracted the attention of thousands of housewives besides securing many prospects

end of a month it has been turned into a model wash room and sewing room.

There had never been an electrical exhibit in the market although it had been open for several years. When the complete laundry unit was installed including washer, stationary tubs, and a gas heated mangle and ironing board, a demonstrator was secured. Each day the demonstrator would do at least one complete washing. The clothes were in many cases supplied by a prospect who desired a demonstration of the machine.

cleaner and an electric sewing machine.

One of the features of the display was the daily report submitted by the demonstrator. The blank showed the actual number of women who asked for demonstrations, and approximate reports of the number who merely asked questions or stood about the booth and watched the demonstration. On an average day the demonstrator was able to secure from fifteen to forty prospective customers, proving that the advertising return warranted the continuance of the expense.

Los Angeles Dealer Gives Power Order with Each Sale

Originality was the keynote of a recent sale of washing machines which the Parmelee-Dohrmann Company of Los Angeles desired to sell out because they had discontinued handling the line. In place of giving the usual mark-down which is associated with a sale in almost every other line of business, the

company had orders printed on the electric light company for \$10 worth of power and gave one away with each machine that was sold.

Giving away the power order meant that the store was spending \$10 to sell each machine in addition to the advertising cost, but it did the work. Over a hundred of the washers were sold within two weeks and the stock was closed out.

Accurate Determining of Resale Prices is Vital

BY R. E. CHATFIELD

Ex. Sec., British Columbia Elec. Devel. Assn.

Computation of resale prices so as to allow for overhead and net profit is a mathematical trick with which all dealers are not familiar. Every dealer knows certain items of expense must be paid which cannot be charged against any particular department of merchandising activity. Among these items are rent, office salaries, office expenses, depreciation, taxes, insurance, and a myriad of other little items all classed under the general term of overhead.

The dealer recognizes these items as part of the cost of doing business. Information of the amounts to be expended under these headings is readily obtainable. Gross sales for the year are also known. Therefore the relation of overhead expense to gross sales may be readily determined on a percentage basis. Assuming the gross sales for the year to be \$28,000 and the total of expenses constituting overhead to be \$7,000, the fixed charge or overhead expense would be 25 per cent.

Often a dealer having determined this overhead charge will attempt to cover the charge by adding to the wholesale cost 25 per cent and then an additional five per cent for net profit. The process is suicidal. To illustrate, assume that a motor costs \$100. Working on the above plan, he would set a resale price on the motor of \$130 or a gross profit of \$30. The overhead on gross sales has been previously determined as 25 per cent. At this rate overhead alone on the sale of the motor would be \$32.50, or a net loss of \$2.50 instead of the five per cent profit assumed.

The problem then is to make the mark-up high enough to cover the overhead. Certain tables have been prepared to be used for this purpose but without these the dealer would be almost helpless. Better far for every dealer knew the following mathematical "trick" of figuring resale prices.

Using the same figures as above, in order to show a 30 per cent gross profit on the sale of the \$100 motor, subtract .30 from 1.00 leaving .70. Now divide the wholesale cost, \$100 by .70, and the quotient is found to be \$142.85, or the resale price necessary to show a gross profit of 30 per cent and a new profit of 5 per cent.

A man can, by laying too much stress on free service, suggest that since the free service is of such value, the appliance must need a lot of it.

Catching a Prospect's Interest With Window Displays

Novel Ideas for Boosting Sales of Electric Appliances by Means of Unique Displays and Demonstrations Successfully Tried Out by Dealers in Many Western Cities

Converting the prospective customer's attention into interest, then into the desire to possess and lastly into the decision to buy, is recognized as one of the rudimentary laws of merchandising. Once interest is aroused, the problem of making the sale is purely a matter of good salesmanship. Getting the attention of the prospect and exciting his interest are the difficult steps in the sales formula. Effective window displays are the basis for the success of many a dealer. There is no better way of boosting sales than by so dressing the store windows that they will attract the attention of the average passerby.

In Oakland, Schleuter's used an ingenious display to attract the housewife's attention to an electric washer. One of the front windows is so constructed that the glass and under panel may be removed, leaving the interior on the level with the sidewalk and placing no obstruction between pedestrian and the goods. A sign was placed on the wall, reading "Press Button to See Machine Operate." Women saw the sign and the button and tried it out. Salesmen inside the store, hearing the machine operate are soon outside and in nine cases out of ten were able to give the housewife the demonstration she herself unknowingly started.

A window of the Pasadena Hardware Company that combined the standard vacuum sweeper display of having a demonstrator remove quantities of flour from the top of a carpeted table, with a novel display for catching the attention of the passerby, recently attracted considerable attention. Three of the sweepers were so arranged that the currents of air from their nozzles kept three colored celluloid balls constantly in the air. Passing pedestrians naturally believed that the balls were suspended from the ceiling on strings and their curiosity led them to inspect the arrangement more closely. Once stopped they naturally would watch the demonstrator remove the flour from the carpet.

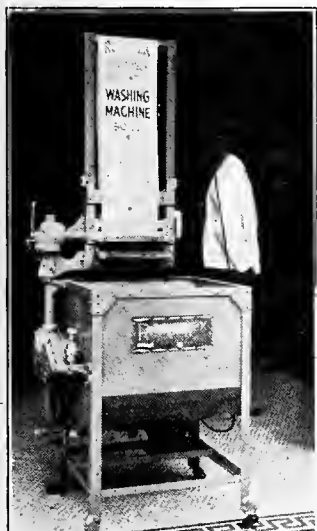
A dealer in a Northwestern city deemed it wise to sacrifice one window of his store merely to attract the attention of the passerby to the other. A perfect model of an airplane was suspended from the ceiling by fine wires. In place of a propeller it carried a celluloid wind wheel. A concealed fan played upon the plane caused the wheel to revolve at a high rate of speed and the plane to sway naturally from side to side as if in actual flight. At night the illusion was further heightened by a series of tiny electric lights placed upon the wings, and fed by a small battery in the fuselage. In the dimly lighted window the supporting wires were invisible.

The Denver Gas and Electric Company recently used a display which not only brought people to the sales rooms but also made a strong recommendation for the electrical sweeper which the concern was selling. Delivery tags were saved and the window trimmer was instructed to use them to form in letters four feet high the name of the sweeper. Pedestrians stopped to see what formed the letters, noted that the tags represented half a thousand buyers of the sweepers, and were half convinced that the machine must be very satisfactory. Large cards in the corners of the window read: "IS YOUR NAME HERE?"

During the summer a fan dealer in a torrid western city succeeded in attracting an unusual amount of interest to his windows. In the center of the display was a large snowman. Grouped around the man were fans all in motion and the floor of the window was covered with snow. It did not matter that the man and the snow on the floor consisted of simple cotton batting. Pedestrians imagined themselves to be cool from merely looking at the window and the illusion was heightened by a battery of three larger fans playing upon the sidewalk from the interior of the store. Inexpensive yet effective, the display was the motive for many sales.

With the approach of the Christmas holidays attention might be called to an enterprising dealer who converted a fairly dead display into a most lifelike one by a simple trick last season. A conventional chimney, snow covered roof and Santa Claus failed to attract the desired amount of attention. The dealer placed a fifty watt red lamp and a fifty watt clear lamp inside the chimney with reflectors so arranged as to direct the rays upward. He then secured a small incense burner, filled it with incense and set it to burning. With the lights playing upon the smoke as it curled from the chimney, action and reality were created and a display which promised to be a failure was turned into a real success.

A combined window display and demonstration that sold many electric waffle irons was recently effectively used by a southern dealer. He first secured the services of a woman who was an expert at making waffles. A model kitchen was installed as a window display. The woman merely made and cooked the waffles like an ordinary housewife. No showcards were used other than one giving the recipe for the waffles. As soon as a number of waffles were cooked they were distributed to patrons in the store. They were good waffles and many irons were sold. With each sale, a copy of the recipe used by the demonstrator was given away.



The washing machine converted into highly effective moving display

A moving display catches far more prospects than does the ordinary stationary machine... Motion will attract attention and arouse curiosity more often than an attractive yet lifeless window arrangement. The Beacon Light Company, Los Angeles, has made a practice of having some electric appliance in motion constantly, either in one of the windows or at the entrance of the store... A recent stunt was to build an upright extension on the ring of a washing machine and to place a roller across the top of the device. A belt of signcloth was so placed as to run around the two rollers, the lower one being the bottom roller of the wringer itself. The belt bore a legend printed in large red and black letters describing the strong selling points of the washer, the terms on which it might be purchased and other descriptive material. As the wringer rotated the sign-belt slowly revolved so that it could be read by the many whose attention was captured by its motion. The same idea was applied to an electrically driven sewing machine. The belt in this case was made of white silk and needed no rollers as the machine in operation kept it constantly revolving. It also bore a legend describing the advantages of the machine.



Attracting attention with a moving sign attached to a sewing machine

Manufacturer, Contractor and Dealer Cooperate

Cooperation between manufacturer, jobber, electrical contractor and dealers in Vancouver has reached the stage where a joint advertising campaign was recently staged. The Canadian General Electric Company during the campaign took space in a Vancouver daily paper to advertise the names of electrical contractors and dealers. Readers were urged to consult an elec-

Does Free Service Constitute a Sound Business?

Arguments Advanced by Northwest Electrical Service League Regarding the Evils of Free Service.

BY STEPHEN I. MILLER

Executive Manager, Northwest Electrical Service League

Free service which electrical dealers are giving customers has three inherent evils which must be done away with in the near future. The present system of free service puts a premium on the dishonesty of the customer, puts a premium on his carelessness and places a part of the sales cost and items that should either be a part of the manufacturing cost or the cost of operation.

Bulletins have recently been issued in the form of two window cards, one of which invites the public to buy from electrical dealers because only through such dealers can they secure the service which makes the appliance purchased continuously what it should be. This follows the policy of the Northwest Electrical Service League, to give, in so far as it can, the service which members of the industry desire. It is not the policy of the league to urge changes to which members of the industry are opposed. On the other hand it may be highly profitable for dealers to consider how soon they may in wisdom dispense with a custom which is such a serious burden as free service for a considerable of time.

In the first place, is it free service or is it prompt and efficient service which the customer really desires? Does the average dealer not really cheapen the quality of the service both in fact and in the opinion of his customer by stressing the idea that it is free? As a matter of fact would the dealer not get every advantage he now gets, if instead of stressing free service, he stressed prompt and efficient service? Could he not also more effectively stress the idea that the greatest asset to the customer from patron-

izing a legitimate dealer was through getting the advantage of his expert judgment.

The real advantage in buying from an electrical dealer is that in proportion to his professional attitude to his business he really does know his business and gives the customer the benefit of his knowledge. There are many good washing machines and many good vacuum cleaners, but there are also many which are not so good. The dealer who knows his business will not have these in his stock, and not the least real arguments for buying from the legitimate dealer is that he has refused to buy some of the electrical goods offered for sale by department stores, drug stores and hardware stores.

Some are frankly advocating the doing away with free service. It encourages carelessness. A woman who can drive an automobile ought to be able to run a vacuum cleaner or washing machine, and ought to pay costs of operation of them just as she does on her car. Neither should she be allowed to forget how long she has had the article which needs attention.

Finally the gross margin of profit in electrical goods is entirely too low to allow of free service. The legitimate dealer earns all the profit there is in such goods when he gives the customer the benefit of his expert knowledge and teaches her how to use the appliances. He is entitled to fair returns in time and material necessary to repair either her blunders or the normal results of operation. And is may be that the sooner he charges for this extra service, the sooner his business will show the profit it ought to show.

Electricity Means Convenience

Makes Your Home More Comfortable, Lightens Labor and Lessens Loss

Bring Your Home Up-to-date

Have it wired for efficiency. Many are not getting full use of electrical appliances because of insufficient electrical connections. Lighting facilities are often inadequate or inconveniently placed. Consult an electrical contractor or dealer; let him offer improvement suggestions.

C.G.E. Convenience Outlets and Plug Clusters.
C.G.E. Quality Supplies, Lamps and Wires.
Hotpoint Appliances, Washing Machines,
Premier Vacuum Cleaners

Everything Electrical for

Parlor, Living-room, Dining-room, Kitchen, Bedrooms and Basement

Buy Your Electrical Goods at Electrical Stores

ELECTRICAL DEALERS AND CONTRACTORS

Electrical Supply & Contracting Co. Limited 741 Granville Street	Jarvis Electric Co. 519 Richards St.	CONTRACTORS C. G. Carter 129 Hastings W.
Perry Electric Co. 1100 Granville St.	Orphan Electric Co. 725 Pender W.	C. H. E. Williams 200 Richards St.
Maier Electric Co. 414 Hastings West	Electric Shop 12 Hastings E.	Littler & Marley 303 Pender W.
Universal Electric Co. 1517 Broadway West	R. F. Latta 3044 Granville St.	J. G. Weston 411 Howe St.
United Electric Co. Limited 451 Seymour St.	Light Electric Co. 2603 Alma	Munday, Bowland & 510 Hastings W.
Jenkins Electric Co. Limited 539 Main St.	Clayton Electric Co. 2217 Main St.	R. M. Dicker 1228 Pender W.
Knashforth Electric Co. 528 Seymour St.	Parr, Robinson & Bird 346 Howe St.	W. W. Fraser 602 Hastings West
Shand Electric 2527 Granville St.	Burns & Humble New Westminster	Progressive Elec. Co. (C. A. Broder) 518 Robson St.

BUY CANADIAN-MADE ELECTRICAL GOODS WHENEVER POSSIBLE

Directed by
CANADIAN GENERAL ELECTRIC CO. LIMITED
1045 Pender Street W.

Copy of an advertisement from a Vancouver daily paper showing cooperation between manufacturer, dealer and contractor.

trical contractor on matters of electrical installation and to buy electrical goods at electrical stores.

Railroad and Express Companies Give Shipping Rules

Instructions for preventing loss and damage to freight and express shipments are contained in bulletins issued by the Southern Pacific Railroad Company, San Francisco, and the American Railway Express Company in campaigns which are being conducted to cut down the enormous payments for lost and damaged freight and express due to this so-called "economic waste."

Special attention is called in each bulletin to the necessity of careful packing of fragile shipments, especially those in the electrical industry, in addition to labeling them as fragile. The express company bulletin contains explicit directions for wrapping, packing and addressing shipments of every nature. The bulletin is sent out under the title of "Start Your Express Shipments Right."

The instructions from the Southern Pacific Company are set forth in a series of ten rules laid down by R. G. Fagan, superintendent of freight protection.

Selling Better Lighting Idea Creates New Markets

Opportunity for dealers to take advantage of the better lighting idea in educating the public regarding the wide range of uses for colored lights and at the same time increase their own sales is exemplified in a recent innovation at Vallejo, California.

Through the efforts of the Vallejo Light and Power Company the better lighting idea was sold to the directors of the Vallejo Labor Temple. In connection with the Saturday night dances held at the Labor Temple each week, many additional lighting features have been installed in the hall. The wide variety of effects obtainable has made possible a different lighting effect for a complete program of dances. The men who sold the idea to the directors of the hall proposed the following program, all of which can be made possible by use of the colored lights in the new fixtures:

1. Light of a summer day in June. Every light in the hall turned on.
2. Daylight. Extra large center light and four corner lights, all white.
3. Sunlight. Extra large center light.

4. Sunset. One immense hidden red light.
5. Twilight. Red and blue stars overhead and wall lights below.
6. Evening star. One red star.
7. Starlight. Red and blue stars overhead.
8. Campfire. One hidden red light near the floor.
9. Burning forest. Low small red lights all around the hall.
10. Moonlight. White moon and red and blue stars overhead.
11. Midnight dance. Blue stars overhead.
12. Midnight in the forest. Blue stars overhead, hidden red light near floor.
13. Searchlight played over hall from balcony.
14. Waning moon. Pale moon overhead.
15. Dawn. Pale red stars overhead. Dim red lights at one end of hall.
16. Break of day. Hidden red lights around hall, dim white light at one end.
17. Sunup. All hidden red lights, one large center white light.

The suggestions contained in the program of lighting effects contain many pertinent ideas.

Increasing Production in Industry

Shortcuts in Management and New Power Applications That Have Reduced the Cost of Manufacturing Processes or Increased the Rate of Production.

Ideas and Suggestions by Practical Men.

Checking Automatic Instruments

In many industries waste has been eliminated by the installation of scientific instruments designed for automatic measurement or control. But instruments wear or get out of order and need occasional inspection. There is the case of a gas company which was operating at a loss. It was a chemical engineer who found that its meters were incorrect, and the simple process of correcting the meters turned a loss of fifteen cents per thousand cubic feet into a profit of as much or more. Recording pyrometers have done much in eliminating waste, for they assist in the standardization of processes in accordance with best practice and enable mismanagement of apparatus to be detected easily. Apparatus for automatically analyzing flue gases and recording the content of carbon dioxide has provided checks on fire-room practice that has saved quantities of fuel. More recently a new type of indicator for high-speed internal combustion engines has been developed in the research laboratory, and by means of this device it is not only possible more accurately to determine the performance of the motor but to obtain more power through an adjustment of timing, etc., precise to a degree not previously attainable. With millions of internal combustion engines in use the elimination of waste accompanying a small increase in efficiency becomes very important. A 30 per cent increase has been attained in several instances with the aid of this indicator.

Maintainance of Plant Equipment and Effect on Production

Production is largely influenced by the mechanical condition of the equipment used in the various steps required by the process in use. The output of the labor employed on each machine is determined by the speed with which the machine responds to the efforts of the worker. Time spent in adjustment, in making temporary repairs, in lubrication, in replacing belts, reduces production in a ratio out of proportion to what would result were a proper system of mechanical maintainance in operation. The trouble doctor is a valuable man about a plant but it is better to anticipate the trouble beforehand by a careful periodic examination and conditioning of each machine whether it be a bolt machine or a printing press. This conditioning involves adjustment of bearings, re-babbiting when the limits of wear are reached and the tightening of belts an hour before or after a shift's oper-

THIS DEPARTMENT

will be devoted to a discussion of practical problems of industrial operation and management. Readers' requests for information will be published in each issue, together with the answers to previous questions. It is hoped that readers will take full advantage of this opportunity to profit by the practical experience of others and to give others the benefit of their own discoveries. Space rates will be paid for answers which are published.

ation at regular intervals will greatly reduce the difficulties of the "trouble doctor" and keep the operator's output at an average figure that will reduce the irregularities in machine production cost.

Efficient lubrication with carefully selected and standardized lubricants is the second factor in securing mechanical maintainance. A machine which requires the attention of the operator for lubrication several times a shift is in need of a general overhauling of the lubricating features. Additional oil and grease cups should be installed where needed and the unit studied as a whole to the end that the lubrication require attention only at the beginning of the shift and that delays for lubrication be eliminated.

Power efficiency is another important factor secured by proper maintainance and lubrication. Consistent attention to both may reduce power input twenty to thirty per cent, amounting in a year to an appreciable sum.

Electricity Lowers Operating Cost of Oil Wells

Operating figures for a number of oil companies have been published to show the comparison between engine and motor drive, and they all indicate a remarkably large saving with the latter. Four different companies, for example show savings respectively of 22 per cent (12 wells), 24 per cent (12 wells), 40 per cent (107 wells), and 63 per cent (number of wells not stated). Comparisons for five other companies show average savings, obtained when electric drive was substituted for steam engines, varying from \$452.60 to \$2,773.32 per well per year, the average for all these being approximately \$1275. As the complete cost, installed, of a standard two-speed oil well pumping motor is from \$1600 to \$2000 per well, depending upon the kind of installation work, the comparisons indicate that in nearly all cases this can be fully paid for from the savings in less

than two years, even though the greatly diversified conditions encountered in the oil fields cause a wide variation in the costs of operation.

The items taken into consideration in these comparisons are only those affected by the change, namely: fuel, power, labor, water and maintenance. A few comments on each of these will be of interest.

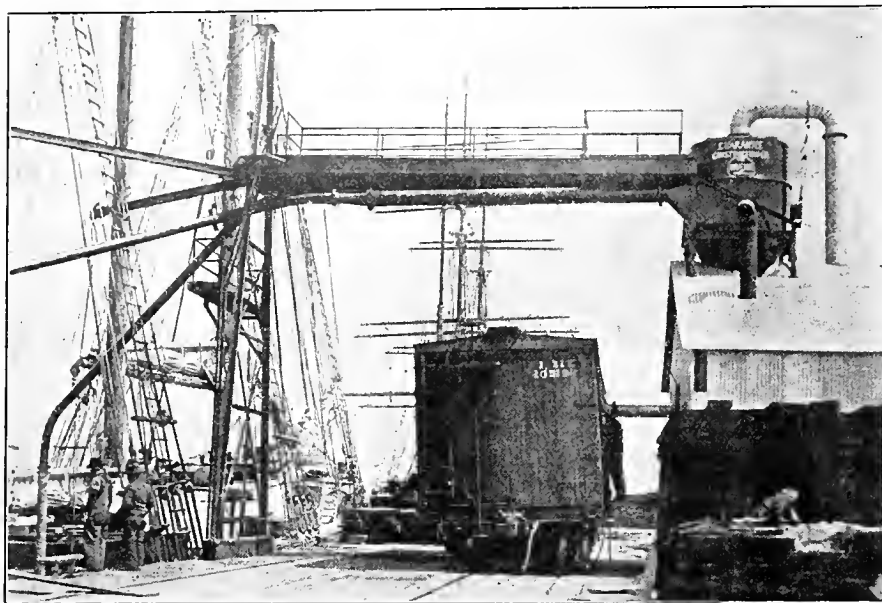
As previously mentioned, the oil field consumption for steam engine pumping operations is from 3 to 15 barrels per well per day. The electric power usually required is from 60 to 150 kw-hr. per well per day, though in exceptional cases it may reach about 200 kw-hr. maximum. From this it is clear that at prevailing power rates electric power is much the cheaper. It may also be cheaper than gas fuel where the latter has any market value.

Motors require much less labor expense than engines. One pumper can usually look after 15 or 20 motors, but cannot properly handle more than 3 to 12 gas engines or 10 to 15 steam engines under the same conditions. One electrician can take the place of several gas-engine and boiler repair men, and firemen are needed only in proportion to the number of boilers retained on the lease.

Water is scarce and expensive in many oil fields, and such as is obtainable is usually bad for boilers. The use of motors eliminates it at a saving often in excess of the cost of electric power.

The average annual repair expense on oil well motor equipment does not reach one per cent of the first cost, even over periods of operation up to 12 years or more. Gas engine equipments not over 4 or 5 years old have and average annual maintenance expense of more than 11 per cent. A low figure for steam engines and boilers is 5 per cent. Another important matter is the investment necessary for a suitable stock of repair parts. For motors, this is not over 25 per cent of that required for gas engines, due to the lower rate of depreciation and the fewer wearing parts.

Other advantages of electric motors are as follows: (1) a motor cannot run away when the rods part; (2) explosions are eliminated and the fire risk is reduced, thus lowering insurance rates; (3) accidents are fewer; (4) more reliable speed control is obtained; (5) better motion of cleaning-out tools is produced by motors than by gas engines; (6) motors have a simpler method of control than engines; (7) electric power consumption can be accurately measured; (8) electric drive is cleaner and quieter than engine drive.



Pneumatic stevedoring equipment removing a cargo of copra directly from the hold of a vessel to a car at the wharves of the Parr Terminal Company on San Francisco Bay.

Vacuum Process Successful for Unloading Copra

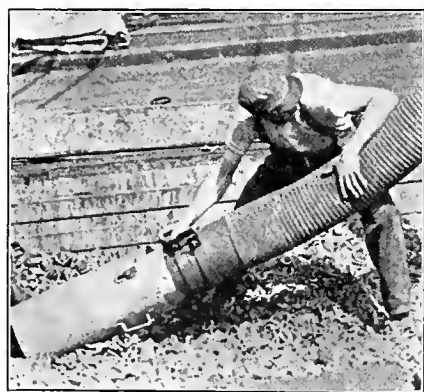
Terminal Company on San Francisco Bay Uses Pneumatic Equipment for Removing Cargo From Ships, Cutting Cost one-third

Copra, the dried meat of the coconut, rapidly increased as an import during the war when coconut oil was found useful in making glycerine for the manufacture of explosives. Being useful also for making butter substitutes, laundry and toilet soaps, vegetable lard, salad oil, etc., the demand

oil is extracted for the uses referred to above and the pulp or meal is used for feeding cattle and sometimes as fertilizer. Sun-dried copra, as the name indicates, has been thoroughly dried in the sun. A second grade, known as "fair merchantable Manila" is copra which was partially or imperfectly dried when received at Manila and which has been redried before shipment or before the extraction of oil.

In the Parr terminal, recently completed at Oakland on San Francisco Bay, there is installed a so-called vacuum system for unloading copra which decreases by about one-third the time which a copra-laden ship must lie at the dock for unloading—an advantage which has at once appealed to ship owners. It also materially decreases the cost of unloading as well as the number of men necessary to carry on the work.

The plant with which the copra is handled in this way consists of two air blowers operated by 75-hp. electric motors. These blowers serve two separate air lines; one creates a suction to pull the copra out of the hold of the vessel, and the other builds up air pressure in a second line which pushes the copra through the delivery pipe that runs to railroad cars on the wharf or bins in the terminal warehouse. The nozzles or intake ends of the line running into the ship's hold are 8 in. in diameter and are made flexible so as to facilitate working in corners and in cleaning up. In the system as installed at the Parr terminal two such nozzles can be operated simultaneously. The 8-in. lines from these nozzles run to a bridge over the railroad tracks where they unite in a single 12-in. line delivering to a conical shaped separator tank on top of the wharf shed. At the base of this tank a patented gate transfers the copra from the vacuum to the pressure system by



Nozzle on the vacuum stevedoring equipment at the Parr Terminal operated by one man ready to begin unloading cargo of copra.

for it in American markets increased rapidly. In fact, the greater part of the copra produced in the Philippines, either in its raw state or in the form of coconut oil, is now said to enter the United States through Pacific ports, particularly San Francisco and Seattle. Approximately 900,000,000 coconuts are annually made into copra in the Philippines, according to commercial agency estimates, which indicates that trade with America in that commodity has reached considerable proportions.

Although there are now in operation in the Philippines about 40 oil mills with a daily capacity of 2,000,000 tons of oil, copra is still shipped in large quantities to American ports where the

which means it is conveyed through the delivery system. The average length of pipe-line from the hold of the ship to freight car at this terminal is approximately 135 ft. but it is said to be possible to deliver copra as much as 1500 ft. if necessary. When delivering from ship to freight car in the ordinary way the capacity of the equipment described in the foregoing is about 35 tons per hour.

Power Distribution Problems for Rural Communities

With approximately 30 per cent of the population in the Pacific Coast and far western states classed by the United States census as rural and with the majority of them isolated users of electric power, there has been difficulty in finding a suitable method of supplying them with power, especially in districts adjacent to high tension transmission lines. Economical and at the same time efficient installations are a necessity which the power companies desire.

There are three methods of distributing power to rural customers from high tension lines; first by a distribution line paralleling the transmission line for its entire length; second by individual transformers for each customer or group of customers and third by a combination of these two methods with distribution lines running each way from the various step-down points.

From an operating standpoint and for continuity of service the distribution line parallel to the high tension line for its entire distance is best. However, this method is usually the most expensive, especially if the customers are widely scattered. The second method using direct transformation for each customer causes a very high cost for transformers, and this increases with the voltage of the transmission line. Besides this, every tap on a high tension line makes a possible source of trouble. Theoretically there is no limit to the ratio of transformation which can be safely and satisfactorily used. However, from a commercial standpoint the cost of small transformers for high voltage makes them impracticable for general service and such transformations as from 22,000 or 33,000 to 230/115 volts is justified only in exceptional cases. Even in the case of 13,800 volts if there are a number of customers to be served not too widely scattered, it may be found economical to step down and distribute at 2300 volts instead of tapping the 13,800-volt line for each customer. In making a comparison of the two systems it is necessary to consider not only the cost of the pole line itself, but also the cost of the transformers and the lightning protective apparatus. The smallest commercial transformer for 13,800-volts is 2½ kva., which costs more than three times as much as the 1½ kva., and two times as much as the 3 kva. transformer for 2300 volts. The 13,800-volt transformer costs about 75 per cent more than the 1½ kva. and 40 per cent more than the 3 kva. transformer for 6900 volts.

General Engineer, C. W. DRAKE, Westinghouse Electric and Manufacturing Co.

Activities of the West

A Business Man's Department Devoted to Events and Developments in Western Industrial Centers—Including News of Interest to Readers in Public Utility, Industrial and Trade Fields

Plan New Power Project

Hydroelectric Project to Add 200,000 Hp. to California Systems

Power developments on the Middle Fork of the Feather River in California to the extent of 200,000 horsepower will be undertaken by the Middle Fork Development Company as soon as final permits are received from the state water commission, according to Lars Jorgensen, chief engineer and Karl Brehme, financial superintendent of the company. Approximately \$30,000,000 will be expended on the project.

The development scheme calls for the erection of three dams, one at Gold Lake impounding 19,000 acre-feet of water, one at Grizzly Valley, impounding an additional 90,000 acre-feet and the third at Buck's ranch, where 70,000 acre-feet would be stored. Construction work on the dams is expected to start next spring.

The dams will furnish water to six hydroelectric plants along the Middle Fork, including three major and three minor plants. The three major units will be located at Nelson's Point, Crooked Bar and Bean Creek. Irrigation water will be supplied to Sacramento valley ranchers while the power will be marketed to existing companies.

Power Companies Appeal Decision Won by Los Angeles

The Mono Power Company and the Southern Sierras Power Company have filed notice of appeal in the United States District Court from an order condemning the property belonging to them in the Owens River Gorge for the benefit of the city of Los Angeles. The municipality was recently awarded a favorable verdict in a condemnation proceedings against the two power companies on the grounds that the property owned by them was needed by the city in their own power development. A jury held that the property was worth \$525,000, the power companies maintain that its value is \$900,000 while Los Angeles held that \$400,000 was a reasonable valuation.

The Utah Power & Light Company has engaged the services of Mrs. Louise Palmer Weber, noted lecturer on home economics and dietetics, for a series of ten free lectures, for the benefit of the housewives, which began on September 9th, at the Commercial Club, Salt Lake City, and are to be held every Tuesday and Friday afternoon, after a period of five weeks from that date.

Mrs. Weber will conduct a campaign of education in the use of electricity in cooking and furnishing expert advice and instruction in home economics.

Utah Steel Corporation Increases Capital Stock

Company to Spend \$3,000,000 in Additions to Present Plant For Handling Output of Utah Iron Mines

Authorization for increased capital which will ultimately result, through the expansion of the company's operations and the increasing of its facilities at the Midvale plant, in the establishment of one of the largest industrial enterprises in Utah in which the use of electric power will be extensive, has been granted to the Utah Steel Corporation.

At a meeting held by the stockholders of the company in Salt Lake recently, it was unanimously decided to increase the preferred stock from 7500 to 50,000 shares at \$100 par value and to increase the common stock from 17,500 shares at \$100 par value to 50,000 shares without par value. The common stock is expected to act as a bonus to new purchasers of the preferred stock.

Has Plant at Midvale

The company now operates a steel fabricating plant at Midvale, Utah, from which the present product is mainly bar steel, for which a ready market has been established. The proposed new equipment will include sheet mills, a blast furnace and subsidiary mills and shops, the total cost of which will be \$3,000,000, the amount of new capital the company proposes to obtain. Of this \$500,000 will be underwritten by the McKee Blast Furnace Manufacturing Company of Cleveland, Ohio, another \$500,000 has been assured by eastern capitalists, and it is planned to raise the remaining \$2,000,000 in the west, a considerable portion of which is assured by present stockholders and by Utah and California investors.

It is expected that the installation of the new equipment will begin before

the end of the present year. It will require about six months for the building of the sheet mills and a year to complete the blast furnace. The latter will cost approximately \$1,500,000 and will contain about 3000 tons of steel.

Will Increase Capacity

The contemplated additional facilities will increase the capacity of the plant from 6000 tons of steel a month to 25,000 tons, with an estimated value of from \$10,000,000 to \$12,000,000 a year. The blast furnace will have a capacity of 50 tons of pig iron a day and will be the most modern in the United States.

Simultaneously with the commencement of increased operations of the plant of the Utah Steel Corporation, mining of iron ore in Iron county will begin. There are vast deposits of high grade ore in that locality which have scarcely been touched, and which will furnish unlimited quantities of raw material upon which to work. The ore is said to run approximately 58 per cent iron, which is a higher percentage than is found in any other iron deposits in the United States.

To Build Railroad

In regard to railroad facilities, the building of a line twenty-two miles long, is all that is required. The line is to be extended from Lund, on the Salt Lake Route.

A ready market for the output of the plant is assured by the shipping of the products to Pacific Coast points and also to points as far east as the Mississippi River, which consumers are now dependent upon plants situated at a much greater distance.

Propose Water-Rail Terminal on Gulf of California

A party of railroad and harbor engineers, accompanied by divers have been engaged in making a study of a proposed rail and water terminal at Rocky Point on the Northwestern shore of St. George's Bay, Gulf of California, which is about 100 miles north of Guaymas, Sonora, Mexico, according to reports received from the American consul at Guaymas. A terminal at this point, if served by an extension from the present terminus of the Tucson, Cornelia and Gila Bend Railroad at Ajo, Arizona, would provide a much needed western outlet for products of the Arizona copper mines. The proposed tide water terminal at Rocky Point would be only 150 miles from Ajo.

Pacific Electric Railways are Valued at \$71,194,759

Valuation of the properties of the Pacific Electric Railway Company of Los Angeles, according to the historical reproduction method of computing the cost of the line, is placed at \$71,194,759 in a report filed with the State Railroad Commission by Richard Sachse, chief engineer for the commission. The report was made to be used in a hearing for an increase in rates which the railroad has asked. The hearing will be held on October 11. Two years were required to compile the figures contained in the report. They show that the reproduction cost new, under a five year period ending December 31, 1920 would be \$103,600,000, undepreciated.

Kern River Canyon Hydroelectric Plant Opened

San Joaquin Light and Power Corporation Dedicates \$1,800,000 Project which Adds 12,000 Hp. to Company's Lines

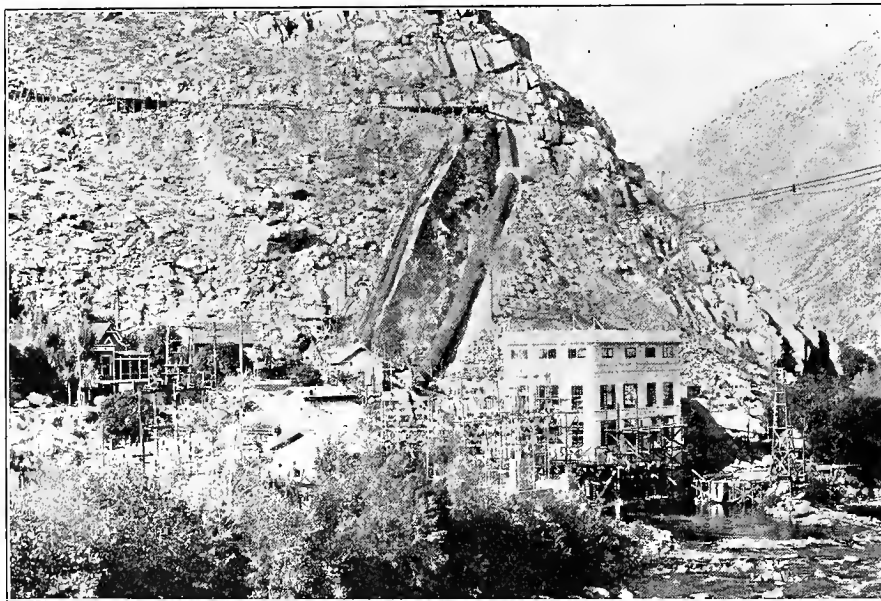
Dedication of another finished unit of the San Joaquin valley's basic industry was celebrated September 17 at Kern River Canyon, when 1100 people gathered for the formal opening of the new \$1,800,000 hydroelectric plant of the San Joaquin Light and Power Corporation. The plant adds 12,000 horsepower to the company's system.

California State Railroad Commissioner Chester H. Rowell gave the principal address. Other speakers were William G. Kerchoff, president of the corporation; A. G. Wishon, vice-president and managing director, Rex C. Starr, construction engineer on the project and Col. J. F. Dearth, first superintendent of the original Kern River power house. Commissioner Rowell said in part:

"From the limited beginnings of earlier time the electrical development of California has gone on until California leads the world. The Pacific Coast has now realized that which the rest of the Nation is merely trying to work

Construction on the Kern River Canyon project was begun in December, 1920. Included in the engineering feats which marked the construction of the project was the enlarging of an 8300 foot tunnel from 6½ by 6½ ft. to 13½ by 14 ft., pushing 5000 ft. of the tunnel through loose rock which had to be lined with reinforced concrete. A 200,-ft.-long suspension bridge was also placed across the canyon.

The power house is equipped with a 12,000-horsepower generator, driven by the latest type Francis turbine having a White regainer or hydrocone which gives the maximum efficiency from all water delivered. The generator, turbine, control unit and transformers are of Allis-Chalmers construction. Other equipment consists of a Westinghouse switchboard, Kelman 60,000-volt oil switches, Allis-Chalmers direct connected exciter, and a 50-ton crane for handling the heavy machinery. The power is generated at



New \$1,800,000 Kern River Canyon power house of the San Joaquin Light and Power Corporation, which will generate 12,000 horsepower for use in the San Joaquin Valley and which was officially opened September 17.

towards. The U. S. Government has a survey in progress to ascertain if they can, upon the eastern shore, link up the various plants that exist at present and those of the future so that they can, in future, do on the Atlantic coast that which the Pacific has already done. On this, our coast, the development of hydroelectric power has progressed to this point after having passed the stages of fuel power of different kinds until today we have reached a point of development unequalled anywhere in the whole world."

As one of the features of the entertainment for the guests hundreds of colored lights were turned on the 250-ft. water fall during the evening, giving a weird effect to the cascading water.

Hearings on a bill providing for the compulsory adoption of the metric system of weights and measures are to be conducted in Washington, D. C., in the near future by a sub-committee of the Senate Committee on Manufactures,

11,000 volts and then stepped up to 60,000 volts for transmission.

With a normal flow of water through the tunnel it is estimated that an additional 4000 horsepower can be developed at the plant. The dam itself will be completed October 15. During the construction of the project communication between the main offices of the company in Fresno and the construction offices was maintained by wireless. The men responsible for the work include Rex C. Starr, chief construction engineer, H. K. Fox, superintendent and Bruce McMillan, resident engineer.

composed of the following: Senator McNary, Oregon, chairman, Senator Weller, Maryland, and Senator Jones, New Mexico. The sub-committee was appointed at the request of Senator Ladd of North Dakota.

Salt Lake City Electrical Home is Formally Opened

Another electrical home was added to the half score in the West when the Rocky Mountain Electrical Cooperative League opened the newest adjunct for the demonstration of labor saving devices for the housewife in Salt Lake City on September 17. The home was kept open for the public until October 1. It is estimated that at least 15,000 people visited the home during the two weeks it remained opened.

The home is of the two-story, seven-room construction, designed after the New England colonial type. The wiring scheme provides nearly 150 electrical outlets and 50 switches. Approximately fifty electrical appliances are demonstrated, including a modern refrigerating plant, a complete laundry, an electric range and dishwasher, an electrically equipped garage and a burglar alarm system. Patterned after the homes constructed in many western cities, Salt Lake's home also includes many new innovations in the way of conveniences.

The home was designed and constructed by L. B. Swaner. A full description of Salt Lake's electrical home together with illustrations will appear in the October 15th issue of the Journal of Electricity and Western Industry.

Non Union Labor Successful in Washington Coal Mines

Non-union labor employed in the coal mines in Washington is showing increased efficiency and an increase in the average output per man according to reports filed by the various mine superintendents in Seattle. That the mines will soon be in full operation with production normal is indicated by the following statement issued by N. D. Moore, vice-president of the Pacific Coast Coal Company:

"Progress to date has been satisfactory. The production is building up slowly but steadily. It was of course expected that it would take time to get the mines in shape after five months' shutdown, to say nothing of training new men. We now have more than 500 new men working and we are very much pleased with the general type of these men. Part of them are experienced coal miners, and the balance metal miners of long experience who are quickly picking up the difference in coal work. Most of the new men have families which will be brought in as fast as we have accommodations available for them. The total production of the several mines operating has now reached 500 tons per day, which is nearly three times what it was a week ago. We expect the increase to continue."

Sproule Says Southern Pacific Not to be Electrified

William Sproule, president of the Southern Pacific Company, in a letter to the Peninsula Bureau of Chambers of Commerce at San Mateo, California, has stated that it is not practicable or desirable for the railroad company to electrify its lines between San Jose and San Francisco. In his letter Mr. Sproule states,

"High cost of money caused by the World war, excessive taxation, unequal competition by untaxed motor vehicles for hire over public highways, which we were heavily taxed to build in the first place and are taxed to maintain afterward, with further competitive highway construction urged at this time, all combine of themselves to prevent the possibility of favorable answer to your call for electrification."

California Oil Workers Make Unusual Strike Request

Approximately 8000 union oil workers in the Kern county fields of California have organized a strike which has grown to such proportions during the past three weeks as to threaten the closing down of all oil producing work in the state and the possibility of both state and national interference. Governor William D. Stephens has already had a state investigation made which resulted in the withdrawal of the so-called strikers' "armies" from the field.

The strike is unusual both as to the reasons advanced by the workers for holding out and the method employed in carrying out their program. The strikers state that they (1) are willing to accept the open shop plan of operation, (2) have accepted the \$1.00 per day wage reduction announced by the producers, (3) and do not demand working conditions which the producers are unwilling to grant. The sole demand is that the federal government underwrite the terms of the agreement for a period of one year.

The strike is being conducted under the direction of a "law and order" committee of the union which has placed in the field a mobilized army of 2500 strikers, completely officered by 450 former service men, an airplane scout patrol, and wireless telegraph stations at various outposts. For two weeks the "army" patrolled all roads leading to the fields, stopping all automobiles and turning back all men coming to the fields in search of employment. Automobiles and motorcycles are used to carry the detachments of men from place to place. Each officer is clothed in the authority of a deputy constable of the county and a deputy marshal of the town to which he is assigned.

Following the investigation by the representative of the governor these patrols were taken from the roads but the army was kept mobilized. Latest reports show that the men are preparing to hold out indefinitely.

Calaveras Dam to be Raised to Height of 175 Ft.

Work on the Calaveras Dam of the Spring Valley Water Company in California has recently been resumed in accordance with a ruling of the State Railroad Commission. At its present height of 85 feet the dam stores 8,000,000 gallons and when raised to 175 feet will impound 43,000,000 gallons and will increase the daily supply of San Francisco by 24,000,000 gallons. The present work is of a preparatory nature and no decision has been made as to the method of handling and depositing the material with which the structure is to be raised.

Republic Flow Meter equipment is being installed in the Chehalis steam power plant of the Northcoast Power Company. This combined with other economy measuring apparatus, it is believed, will make this plant one of the most complete of its kind in the Northwest. It is expected that the three 370 hp. Stirling boilers equipped with the new dutch ovens of 200 sq. ft. of grate area for hogged fuel will successfully develop 900 horsepower.



The Utah State Capitol building at Salt Lake City showing the effective yet simple illumination scheme which makes the structure visible from all parts of the surrounding country each night.

Utah State Capitol Building is Illuminated Each Night

An innovation in the use of electric lighting, and an interesting example of its remarkable effectiveness, is the illumination each night of the exterior of the Utah State Capitol building at Salt Lake City. This beautiful building, located at the head of State street, with a commanding view of the entire Salt Lake valley, now maintains its majestic prominence by night as well as day. Electric lights, which blaze forth each night from its dome, cupola and colonnade, have not only transformed its gray outline against the darkened sky, into an inspiring picture, but have also produced a particularly cheerful effect.

Starting at the top, the ball on the

dome is surmounted by a cluster of fourteen 200-watt lamps. On the cupola are four lamps of 250 watts each. Around the upper circle of the dome are twenty-four 60-watt white mazdas, and the lower circle of the dome is lighted by twenty-five 100-watt clear mazdas. Straight under the colonnade there are ninety-six 100-watt clear mazdas, extending around three sides of the building—24 lamps on the east side, 48 on the south side, and 24 on the west.

It will be noted that the lighting system is not an elaborate one, and yet the results obtained have furnished an impressive example of the value of electric lighting, from a psychological point of view. It is planned to illuminate the building in this manner every night in the year.

Pacific Coast Gas Association Meets at Del Monte

Discussion of problems vital to the public utility corporation was one of the chief features of the twenty-eighth annual convention of the Pacific Coast Gas Association held at Del Monte, Calif., September 20 to 23. Following the formal opening of the convention sessions were held under the supervision of each of the three departments of the Association. Papers were read on technical, accounting and commercial subjects relative to the work of the organization.

One of the chief papers was that delivered by George L. Myers, assistant to the president of the Portland Gas and Coke Company and the Pacific Power and Light Company, on the subject of "Turn on the Light and Have Faith." The following is quoted from the paper:

"We must agree among ourselves that the immediate problem of vital concern to the industry is public relations and further agree that this problem can be most advantageously solved in cooperation with the other utilities and then give thought and form the ways and means to the solution of it. Some of the opportunities which offer to put across the message and to build up good will may be enumerated as follows: Press, Employees, Customers Ownership, Consumers, Civic and Commercial organizations, Schools, Motion Pictures, Chautauqua and Good-will Advertising."

Plans Ready for San Francisco Industries Exposition

Plans for one of the most elaborate industrial expositions ever held in the west are rapidly being formulated by the various committees of the California Industries Exposition which will be held in the San Francisco Municipal Auditorium from November 19 to December 10. Forty of the most conspicuous booths in the immense building have been set aside for the San Francisco Electrical Development League, which will have charge of the electrical industry's part in the display of manufactures. The following committee has been named by the league to supervise the displays:

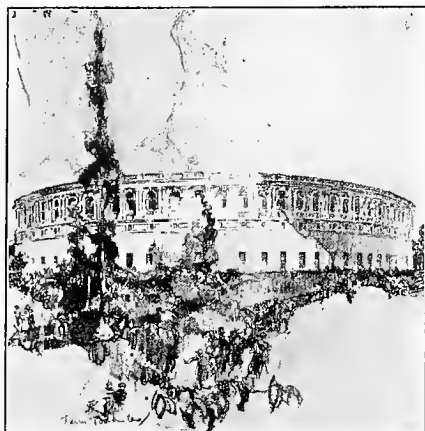
T. D. MacMullen, Majestic Electric Development Company, Chairman; W. F. Price, California Cooperative Campaign, Secretary; Louis Levy, Levy Electric Company; L. E. Voyer, Mazda Lamp Works of General Electric Company; Donald I. Cone, Pacific Telephone and Telegraph Company; L. J. Brown, Western Electric Company; Ellery Stone, Moorhead Laboratory; Henry Bostwick, Pacific Gas & Electric Company; Lloyd M. Hardie, Great Western Power Company; L. Siebert, Drendell Electric Company.

The biennial convention of the Amalgamated Electric Railway Workers of America will be held in Oakland, Calif., in 1923 as the result of action taken at the convention which just closed at Atlanta, Ga.

California University to Build Million Dollar Stadium

What promises to be one of the most interesting engineering problems in the West is brought out in the announcement that the University of California proposes to erect at Berkeley a reinforced concrete and steel athletic stadium to seat 60,000 people. Approximately \$1,000,000 will be spent on the structure.

Funds for the erection of the stadium are to be raised by students and alumni during a two weeks' campaign beginning October 3. Governor William D.



Architects conception of the \$1,000,000 Athletic stadium which is to be erected by the University of California at Berkeley and which will seat 60,000.

Stephens heads the general campaign committee. The financial plan is both interesting and novel in that the value received will be given for all subscriptions. Scrip books valued at \$100 and good over a period of ten years will be issued for each \$100 subscription. The books may be turned in for tickets for any game during the ten year period in which the University of California is a contender.

Range Campaign for California to be Outlined

The policy for a Northern California electric range campaign will be laid down by a special committee representing the power companies, the manufacturers, the jobbers and the contractor-dealers which was chosen at an open meeting in San Francisco on September 13. The committee is charged with outlining a merchandising policy which will be satisfactory to all branches of the electrical industry. The committee follows: R. E. Fisher, Pacific Gas and Electric Company; H. F. Jackson, Great Western Power Company; H. L. Garbutt, Westinghouse Electric and Manufacturing Company; R. M. Alvord, General Electric Company; E. N. Brown, Majestic Electric Company; C. H. Hillis, Electric Appliance Company; W. S. Berry, Western Electric Company; E. G. Alexander, Alexander and Laveson; Louis Levy, Levy Electric Company; J. C. Hobrecht, J. C. Hobrecht Company, Sacramento.

Purchasing Agents Hear Talk on Electrical Development

Members of the Purchasing Agents' Association of Northern California at their monthly dinner at the Commercial Club recently had two experts in electricity as the speakers of the evening, Louis F. Leurey, who spoke on "What Every Man Should Know About Electricity," and Samuel Payne Reed, auto ignition expert and author of a well known treatise on ignition, which is a standard text book in leading engineering colleges.

B. P. Jaggard, president of the association was chairman of the evening, other guests including a group of advertisers and officials representing California industries or interests represented in California, who gave the members of the association a first hand discussion of their commodities or services.

Cooperative Campaign Ready with Christmas Sales Plans

Plans for an extensive Christmas sales campaign have been made, and will soon be laid before the electrical industry for approval, by the California Electrical Cooperative Campaign.

These plans include the use of window display, slide advertising, newspaper advertising, direct mail, and addresses to clubs and meetings. The slogan which has been adopted is "Electrical Gifts are Practical Gifts—Make it an Electrical Christmas" and this message will be brought home in every possible manner. The headquarters of the campaign have issued the following statement:

"To register definitely and effectively, the entire industry must work together on this campaign. The small dealer has not the power to tell the story to as many people as the manufacturer, the jobber or the central station, but he must feel it his duty to tell it to as many people as he can, because he may tell it to someone that the other fellow missed.

"The campaign will in all probability continue from the middle of November up to Christmas; but the week of December 4-10, inclusive, has been designated as Electrical Week and special efforts will be made all over the state to make that truly an Electrical Week, outside the industry as well as within."

With a slogan of "better service to the radio amateur" the Pacific Radio Trade Association has been organized with headquarters in San Francisco. Membership will include radio manufacturers, jobbers and dealers and the prime purpose will be a cooperative effort to popularize the use of wireless telegraphy. The first step in this direction will be a joint exhibit and demonstration in the California Industries Exposition which is to be held in San Francisco November 19 to December 10. The association comprises four districts and includes California, Nevada, Oregon, Washington, Utah and Idaho. The officers are:

President: Arthur H. Halloran, Editor of "Radio." Vice-president: Ellery W. Stone, Pacific Radio Supplies Company; Secretary-treasurer: Max Lowenthal, Globe Commercial Company; Directors: E. T. Cunningham, Remler Radio Manufacturing Company; A. F. Pendleton, Radio Telephone Shop; C. B. Kennedy, Colin B. Kennedy Company.

The Federal super-power survey, recently completed, estimates the cost of an Atlantic inter-connected power system as one billion dollars.

Portland Spending \$2,500,000 on New Hospital Construction

Electrical wiring and equipment running into the hundreds of thousands of dollars will be installed in the six new hospitals being constructed in Portland at an aggregate cost of approximately \$2,250,000. The largest of these new hospitals is the one being erected for Multnomah County on Marquam Hill at a cost of \$1,250,000. The electrical contract for this hospital, not including fixtures, was \$48,000. It will be the finest equipped hospital in the west, having 16 electric bake ovens and all kitchens equipped with the latest electrical time and labor saving devices. A silent call electrical signal system is being installed throughout the building. All surgeries will be equipped with X-ray outfits and various other electrical devices.

In addition to the County hospital there are several other hospitals under construction. The Good Samaritan Hospital is building an addition to the present institution which will cost \$250,000. Several prominent Portland physicians have contracted for the erection of a hospital to cost \$200,000, which will be known as the Portland Surgical Hospital. Work has been started on the second unit for the University of Oregon Medical School, which when completed will cost \$200,000. The Portland Sanitarium has been granted a building permit for the erection of a new hospital in the Mt. Tabor district which will cost approximately \$200,000.



The new Multnomah County Hospital nearing completion at Portland, Oregon. The structure will cost \$2,500,000, while electric apparatus alone will amount to \$48,000.

and work will begin immediately. The Hahneman Hospital which was partially completed a number of years ago has just been completed for the Government at a cost of \$200,000. This is said to be the finest equipped Government Hospital in the West.

Problems relative to every phase of municipal government were discussed at the twenty-third annual convention of the California League of Municipalities, held in Santa Monica, September 27-30. Three important addresses were given relative to municipal ownership of public utilities. C. W. Koiner, city manager of Pasadena, and R. W. Hawley, former chief hydraulic engineer for the State Railroad Commission spoke on "Possibilities of Hydroelectric Power Development in California" while Fred P. Tuttle, city attorney of Auburn discussed the proposed municipally owned hydroelectric project for Sacramento and the outlying districts.

DO NOT FORGET
Fire Prevention Day.....October 9

Joint Convention in Colorado Is Highly Successful

Improved public relations, closer coordination and cooperation within the electrical industry, and the problem of public utility financing was the keynote of the combined annual conventions of the Rocky Mountain division of the National Electric Light Association and the Colorado Electric Light, Power and Railway Association, held at Glenwood Springs, Colorado, September 19th, 20th and 21st.

The attendance both at the convention and the meeting of the Accounting section of the N. E. L. A., which was held in conjunction with the meetings, was the largest in the history of the



C. A. Semrad and E. A. Phinney retiring presidents of the Colorado Electric Light, Power and Railway Association, and Rocky Mountain Division, N. E. L. A. at the Glenwood Springs joint convention.

respective organizations, according to their chairmen.

It was the second annual convention of the Rocky Mountain geographic division and the 18th meeting of the Colorado utilities association. The problem of inductive interference and similar subjects of interest to the electrical world received the attention of the telephone, telegraph and electric light and power company representatives attending the meetings.

All of the larger electric utility companies in the division were represented with the ranking officials of the Mountain States Telephone and Telegraph Company and the Western Union Telegraph Company in attendance. The Colorado state utilities commission, through its chairman, Grant E. Halderman, addressed the convention. He was accompanied by the commission engineer, H. B. Dwight. E. N. Crowley of the Wyoming utilities commission was also present.

M. R. Bump, president of the N. E. L. A., and M. H. Aylesworth, executive manager of that organization, were only able to attend about half of the convention program as they were scheduled to address the Great Lakes division convention at French Lick Springs, Indiana, following the Rocky Mountain meeting.

The industry can only place the blame upon itself for not having prop-

Meetings of Interest to Western Men

erly educated the public, according to Mr. Aylesworth, in his address before the convention. "When the consumers are told the truth about the electric utilities serving them, then will there come that understanding of mutual helpfulness and desire of the public to assume part of the burdens of operation," he stated.

Both President Bump and Mr. Aylesworth explained the activities of the national association in promoting better public relations and the difficulties involved in securing financial backing for local power companies which would allow of development in the cities and the extension of service to rural communities.

F. C. Hamilton, rate expert from New York, who is placing a valuation on a northern Colorado company, emphasized in his address a similar note that the light and power companies must explain to their consumers all the innermost details of the company operations.

Ben S. Read, president of the Mountain States Telephone & Telegraph Company, spoke of establishing good will and the problem of regulatory commissions as they affect the business of all utility companies.

Papers of a technical nature were given by S. E. Doane, chief engineer of the National Lamp Works of the General Electric Company, and L. A. S. Wood of the Westinghouse Electric Company, on the need of improved lighting and developments in this line.

S. W. Bishop, executive manager of the Electrical Cooperative League of Denver, told of the activities of the organization he represented and the plans for enlarging the field of activity during the coming year. "Building Business Through Cooperative Effort" was the subject of his address.

The last morning session was given over to the accounting session activities. E. J. Fowler, general chairman and W. J. Myers of the classification sub-committee, were on the program.

T. O. Kennedy, chairman of the Denver Electrical Cooperative League, who has been recently made chairman of the Committee on Public Utility Information, announced plans which will follow the national trend of educating the public.

The newly elected officers of the Rocky Mountain Division are: T. O. Kennedy, general superintendent, Denver Gas and Electric Light Company, Denver, president; E. P. Bacon, manager, Natrona Power Company, Casper, Wyoming, first vice-president; Arthur Prager, manager, Albuquerque Gas and Electric Company, Albuquerque, New Mexico, second vice-president; D. C. McClure, electrical superintendent, Denver Gas and Electric Light Company, Denver, third vice-president; and A. C. Cornell, manager Intermountain District Western Electric Company, secretary and treasurer.

The Colorado Electric Light, Power and Railway association elected the following officers: President, Fred Norcross, manager Home Gas and Electric Company, Greeley; first vice-president, Walter F. Brown, Mountain States Telephone and Telegraph Company, Denver; second vice-president, C. R. Rudy, Colorado Power Company, Denver; and secretary-treasurer, Miss Minnie B. W. Baker, Denver Gas and Electric Light Company.

The entertainment committee was Walter F. Brown, chairman, B. C. J. Wheatlake, J. W. Ryall, C. R. Rudy and A. C. Cornell.

The conventions voted to hold the 1922 meetings at the same place, Glenwood Springs, next year.

Oakland Architects and Builders Hear Campaign Plans

The message of the California Electrical Cooperative Campaign was brought home to the architects and builders of Oakland, Calif., at a meeting of the Oakland Electric Club held on September 19, when Walter F. Price, field representative for the campaign presided. The largest attendance in the history of the organization gathered to hear the plans of the campaign.

In "The Electric Story" Garnett Young of San Francisco, urged the necessity of better wiring and asked goth architects and builders to cooperate with the electrical industry in educating the public. He cited figures to show that people were buying increased number of electrical appliances and showed the necessity for convenience outlets. In outlining the aims of the present campaign, Mr. Young said:

"The first thing we want is a complete wiring installation in each new house, flat or apartment, which will provide not only for sufficient illumination, but by means of numerous 'Convenience Outlets' and ample laundry space, provide for the use of electrical devices and appliances, the householder being the beneficiary of this foresight at a normal cost.

"Secondly, we want the specification by the architect and actual use by the contractor in these wiring installations, of materials of known quality, thus insuring to the consumer maximum reliability of service and reflected credit upon the electrical industry."

Edwin C. Graff, contractor, and William Knowles, architect, fell into line with the arguments advanced by Mr. Young. Mr. Graff told the gathering that the three inducements to quick salability in a new house were hardwood floors, attractive interior decorations and plenty of convenience outlets. Mr. Knowles stated that the architect welcomed the advice and help of the electrical industry but criticized instances in the past where individual engineers and dealers had given this advice expecting to benefit therefrom by sales. He urged that such advice be standardized and offered by the industry.

The Southern California District, Contractor-Dealers Association voted to participate in all county fairs and city expositions held in its district, at the regular monthly meeting at Forest Home recently. They will ask the Co-operative Campaign to sponsor these displays, which will be financed by the firms in the immediate locality of the fair or exposition.

The Montana Society of Engineers held its first meeting of the new year on September 19 at the Butte Chamber of Commerce. The feature of the meeting was the showing of a new film, "The Story of Petroleum", released by the United States Bureau of Mines. All engineering societies throughout the country are welcome to borrow such films.

COMING EVENTS

CALIFORNIA SECTION, AMERICAN WATER WORKS ASSOCIATION
Los Angeles, Cal., October 1 and 2, 1921

AMERICAN BANKERS' ASSOCIATION
Los Angeles, Cal.,—October 3-7, 1921

PACIFIC COAST DIVISION, N. E. L. A., ANNUAL CONVENTION
Riverside, Cal.—April, 1922

The Westinghouse Electric & Manufacturing Company has just issued Folder No. 4456 with the above title, which fully illustrates the many uses of the small motor, and encourages the use of labor-saving machines in the home, the office, shop and farm.

Bruce Daniels, Pacific Coast Representative of the International Electric Company of Indianapolis, has an interesting and instructive article in the current issue of the Western Confectioner, describing electrical applications in candy making.

Paul C. Bandy, formerly western district sales manager of the Industrial Heating Department of the Cutler-Hammer Mfg. Co., is now manager of the Industrial Heating Department of the Western Electric Company of Chicago.

The Clayton Electric Company of 2317 Main Street, Vancouver, B. C., has moved to new and more commodious quarters at 209 6th Ave. East. The change in quarters enables the proprietor to maintain his shop and store in the same building and so exercise closer supervision over both departments of his business.

The Graham Electric Company, with the assistance and guidance of the B. C. Electrical Cooperative Association has begun to remodel its store at Pender Street. The store front and display windows have already been remodelled and the inside alterations should be completed shortly.

The Peerless Light Company, of Chicago, New York and San Francisco, has brought out a new Christmas tree lighting outfit, which will be known as "Add-A-Set No. 8-80." Each unit consists of eight lights and if more are desired they can be added in series of eight lights and if more are desired they can be added in series of eight up to eighty lights. The set is simply constructed and is packed in attractive display cartons.

S. R. Fralick & Company, of 15 South Clinton Street, Chicago, manufacturers and distributors of conduit fittings and wiring devices, announces the appointment of the following sales agents in the territories indicated: Watts & Barry, Inc., 59 Church Street, New York City; for the Metropolitan district; P. L. Hoadley, 609 Seaboard Building, Seattle, Wash.; for the North Pacific Coast territory; J. J. Schaller, 257 Spring Street, Los Angeles, Cal., Southern Pacific Coast territory.

Fred H. Alden, sales manager of the California Wire Company, manufacturers of insulated wire and cables with headquarters at Orange, California, is a recent San Francisco visitor. Mr. Alden has just come out from the East to take his new position with this company, which has been established during the current year and is the first insulated wire factory west of the Mississippi River.

The National X-Ray Reflector Company, Chicago, have recently issued Catalog No. 22, containing a complete description of all X-Ray direct lighting products. The company has also issued a booklet, "Perfect Lighting for the Home," and a pamphlet, "Wrigley Building, Chicago, Ill."

Manufacturer, Dealer, and Jobber Activities

The Northern Electric Company of Chicago has recently moved its main factory from 542 St. Clair Street to 224 N. Sheldon Street. The new location affords the firm greatly increased manufacturing facilities.

The Birtman Electric Company of Chicago, Ill., through the energetic sales effort of H. J. Gute & Company have made such a splendid success in the distribution of their vacuum cleaner in the West that the distribution territory of this latter organization has been enlarged to include Washington, Oregon, California and Utah.

C. A. Norton is district manager of the newly created Seattle, Washington district of the Westinghouse Lamp Company.

The Porcelain Insulator Co. of Lima, N. Y., has recently issued two bulletins describing their line of pin type porcelain insulators for high voltage work.

The Packard Electric Co. of Warren, Ohio, has issued a booklet illustrating a number of their large transformer installations throughout the United States.

Over-the-counter sales of lamps were increased twenty-five per cent by S. B. Spitz, Peerless agent, Los Angeles, by the use of a "sales promoter" consisting of a circular glass dial bearing the name of the lamp. On a frame surrounding the dial are twelve keyless sockets containing lamps varying from 10 to 100 watts. Behind the dial is a 40 watt red lamp operated by a flasher which attracts attention.

"Los Angeles—Nature's Workshop," is the title of a booklet prepared under the supervision of A. G. Arnoll, industrial expert for the Los Angeles Chamber of Commerce. The scope and magnitude of the city's industrial life and its abundant opportunities for expansion are the inspiration for this booklet.

Schweitzer & Conrad, Inc., Chicago, Ill., has issued a new bulletin No. 106 A on simplified protective combinations for rural service, small towns and industrial plants. The "S & C" simplified protective combinations are designed to reduce, as far as possible, the initial costs of installation of this type of service as compared with the possible return on the investment.

John Sturgess, hydraulic power engineer representing the hydraulic turbine department of the Worthington Pump and Machinery Corporation with headquarters in Harrison, N. J., has opened offices in Los Angeles as Pacific Coast representative of the company. Mr. Sturgess has just completed a coast wide visit to all hydroelectric development centers in the West, and has again returned to his Los Angeles headquarters.

C. P. Scott has resigned as chairman of the Portland District of the Oregon Association of Electrical Contractor-Dealers. A. E. McCoy of the Smith-McCoy Electric Company has been elected to serve out the unexpired term of Mr. Scott, ending January 1, 1921.

Hubert S. Wynkoop, M. E., head of the electrical department of the City of New York, has just completed a concise transcript of the National Electrical Code which has been published by the National Association of Electrical Contractor-Dealers under the title of "The Code at a Glance." The book has been arranged to fit the needs of the man on the job and should fulfill a long felt need among contractors, wiremen, estimators and inspectors.

The Apex Electrical Distributing Company, Cleveland, Ohio, announces the purchase of the Gould Ironer, which it will manufacture hereafter under a new name in conjunction with its other products.

The American Wiremold Company of Hartford, Conn., announces that its general sales offices have been moved from 537 West 34th Street, to 71 West 23rd Street, New York City.

The Western Fixture and Appliance Company of Seattle has been incorporated for \$10,000 by J. P. Conley, D. S. Bovee and R. R. Huff. The company will deal in all kinds of electrical fixtures and machinery.

The Reed-Farley Company of Fullerton, Calif., will soon occupy new quarters in a new building now under construction. The Southern California Edison Company will lease half the frontage and the Reed-Farley firm use the balance. The building will incorporate a number of new ideas in store construction.

Martin J. Wolf, until recently vice-president and sales manager of W. N. Matthews and Bro., Inc., of St. Louis, has been appointed sales manager of the Bussman Manufacturing Company, manufacturers of Buss fuses.



SHOCKING THE ANGLEWORMS

Here is Joe Siegfried, Jr., ten-year-old son of J. H. Siegfried of Pasco, Wash., superintendent of power of Pacific Power and Light Company, busily engaged in giving the angleworms the shock of their lives. He is operating the electric angle worm extractor which he invented to get his bait for frequent fishing trips. The extractor consists of two wires buried under the ground attached to a small magneto. When Joe turns the crank of the magneto, the worms rush for the top of the ground to escape the flow of electricity. Joe is possibly the youngest electrical inventor extant.

Business Outlook in Western Market Centers

Reflecting the Trend of Community Thought on Conditions and Events Affecting Business and Industrial Activities Throughout the West

Compiled and edited for the Journal of Electricity and Western Industry by correspondents in all principal Western cities.

SAN FRANCISCO

Despite the fact that bank clearings during August, were 11 per cent less than for the corresponding month in 1920 reports from all sources indicate that the physical volume of business is greater in this district than it was a year ago. Slight increases in a few commodity lines have had no apparent effect on trade and the approach of the holiday season is already being felt.

The situation in the electrical industry shows improvement due to the resumption of building operations and the announcement of plans for a Christmas sales campaign by the California Electrical Cooperative Campaign headquarters. Elaborate plans are being made by the industry for the coming Industrial Exposition.

The number of building permits issued approximates those of last year for the same month. Especially in the commercial and financial districts is the building activity strong.

Unemployment figures for California show approximately 45,000 men out of work. Harvesting in many districts and new contracts for highway construction will furnish temporary jobs for many.

Crop conditions throughout the Sacramento and San Joaquin valleys, while not as good as last year are almost normal. The farmer will have plenty of money this year, due to eastern crop shortages.

Despite the serious aspects of the strike among the oil workers in the state, there have been no changes either in the price of petroleum or in the daily average production.

LOS ANGELES

Bank clearings are still leading those of last year by a wide margin, the accumulative increases to date amounting to \$160,000,000. Los Angeles harbor is handling \$2,000,000 monthly in trade and still gaining. Approximately \$5,000,000 is to be spent on its further improvement. Building permits still continue to gain while city work on streets and drainage systems in new sub-divisions is continuing on a large scale.

Mercantile stores in the retail district show light increases in prices with no effect on the sales. Electrical appliances are moving slowly. Jobbers admit that there is plenty of business to be had but state that it takes twice the sales effort of a year ago to get it. Many city contracts involving the expenditure of large sums for electrical goods are being let after having been held up for several years on account of high prices of copper, steel and labor. An unusual fall and winter business is anticipated.

SALT LAKE CITY

The outstanding feature of interest to the inter-mountain section was the opening of Salt Lake's model Electrical Home, under the direction of the Rocky Mountain Electrical Cooperative League, which has been open for public inspection during the last two weeks of September.

Continued improvement is noted in general business conditions in this section. The demand for money continues, and many sheepmen and stockmen are said to be liquidating their stock in order to raise money.

The unemployment situation has been somewhat relieved as a result of the beginning of sugar beet harvesting. The sugar factories starting operations about September 25th have furnished temporary employment to a large number of men. The mining situation is practically unchanged. Excepting copper properties, operations are fairly active. Building activity continues very satisfactory. Electrical appliances, such as heaters, etc., are moving slightly better. The hardware trade reports considerable improvement. The lumber trade reports conditions improving, with some stiffening of prices on account of increased demand.

DENVER

There is a decided improvement in the business outlook with every opportunity for Denver and Colorado to grow in prosperity. Banks report deposits increasing as the result of the selling of record crops by the farmers. Sugar factories have opened in the state giving employment to many unemployed. Forty five hundred men are employed in six Great Western Sugar Company factories. The beet crop is said to be the biggest ever known in the state.

Building is on the increase in Denver, with consequent activity in the material market. Thus far this year 1233 more building permits have been issued than for the same period in 1920. Business men state that the worst of the period of depression is over and conditions will steadily improve. They base their predictions on the fact that the state is harvesting record crops.

SPOKANE

Business conditions for the last two weeks have fully justified the optimistic outlook of the preceding fortnight from the electrical jobbers' viewpoint, being better than in any similar period during the year. Sweeping reductions in the wholesale price of many electrical wares to within 10% of prewar prices has increased sales. A com-

mittee of five leading citizens has been appointed by the Mayor to handle the unemployment problem. This committee is to have a central labor bureau for registering the unemployed. All work is to pass through this bureau to be distributed so that while few men will secure steady employment, the worthy ones will be temporarily relieved. Notwithstanding this, there is the very general sentiment that the worst has been passed and that business is on the upgrade. Cedar pole and post men advise that there is an increase of orders, especially on the part of electric railway companies.

PORTLAND

Indications are that the business slump of recent months is nearing an end. Increased industrial activity is noted on every hand and in the case of a large local woolen mill production is 30 days behind orders and the mill is running 24 hours a day.

Early fall retail and wholesale trade is good with indications that it will be still better as soon as crop money gets into full circulation. Building in the commercial class is improving and construction is now actually under way on a \$500,000 apartment house. There has been a heavy wheat selling movement by the farmers, the sales to date being in excess of 7,000,000 bushels. Although lumber production is still only about 70 per cent normal the situation in the lumber industry looks better right along. Recent sweeping price reductions in electrical materials has had a stimulating effect on business of jobbers.

SEATTLE

Despite the fact that business men continue with a pessimistic viewpoint for the immediate future, figures tend to show that business is holding its own with that of 1920, considered one of the best years the Northwest has ever known. In Seattle building permits were issued during the month of August to the amount of \$1,340,430 as compared with permits valued at \$1,972,965. Real estate transfers are holding their own and bank clearings are steadily climbing.

Due to an increasing demand for harvest help, cannery employes and lumber workers in mills and camps, the employment situation shows a slight improvement, particularly in the immediate vicinity of Puget Sound. Approaching winter and reductions in price have stimulated activity in the electrical trade. That conditions among the power companies are good is indicated by the marketing of \$1,000,000 in 5-year, 8 per cent notes by the Puget Sound Power and Light Company.

G. F. Lackey, consulting engineer, has been elected vice president of the Colorado Springs Light, Heat & Power Company to succeed Rush L. Holland, who has resigned to become assistant attorney general of the United States.

Dr. Robert A. Millikan, chairman of the Executive Council of the California Institute of Technology at Pasadena, has announced the appointment of another distinguished scientist to the university staff, Dr. Paul S. Epstein from the University of Leiden, Holland will occupy the chair in mathematical physics.

W. W. Campbell, director of Lick Observatory, and A. H. Babcock, chief electrical engineer of the Southern Pacific Company, together with others, have returned from Ensenada, Lower California, where they have been studying the atmospheric and meteorological conditions that may be expected to exist at the time of the total eclipse of the sun on September 10, 1923. The party went to a point sixty miles south-east from Ensenada where they remained for two weeks. The party was financed by W. H. Crockery.

Earl Browne, newly elected president of the California Contractor-Dealers Association, faces one of the most promising years in the history of the organization of which he is head. With the withdrawal of the California association from the national organization and the proposal for the formation of an independent western division, which will include Washington and Oregon, the program for the coming year is a big one. Mr. Browne has been identified with the activities of the contrac-



EARL BROWNE

tor-dealers of San Francisco since 1907. In that year he joined the Electric Appliance Company where he was employed for two years. Subsequently he was with the Dunham, Carrigan & Hayden Company and the John G. Sutton Company. Two years ago he organized the firm of Browne-Langlais, electrical contractors. In 1917 he was president of the San Francisco Association of Contractor-Dealers. Those who know Mr. Browne feel that as head of the state association he will guide it affairs with a firm hand.

Guy W. Talbot, president of the Pacific Power & Light Company with headquarters in Portland, Oregon, has been conferring with leaders of the electrical industry in San Francisco.

Personals

J. W. Williams, who has been chief engineer of the Northwestern Pacific railroad since 1907, has resigned to become chief engineer of the Western Pacific Railroad.

Carl E. Hardy, superintendent of the Department of Electricity for the City of Oakland, is chairman of the sub-committee on Motor Control for the Industrial Accident Commission of California. His committee, composed of men representative of all branches of the industry, is about to make a report on their investigations, which will pass the subject of motor control to higher planes of attainment in the West.

W. R. Putnam, vice president and general manager of the Idaho Power Company, with headquarters at Boise, Idaho, has returned from an eastern trip to the New York headquarters of the National Electric Light Association, where he attended an executive committee meeting of the National Association in the interests of the Northwest Electric Light and Power Association, of which he is the president.

C. B. Hutchinson has recently been transferred from the San Pedro district of the Southern California Edison Company to its newly organized Fullerton district where he will be the district manager. Mr. Hutchinson has spent practically his entire life in Southern California where he was formerly connected with Salt Lake Railway Company in the operating and traffic departments. He resigned his position with that company in 1916 to enter the employ of the Southern California Edison Company, where he has served successively as salesman, assistant district manager and district manager.

John Coffee Hays, of the Construction and Engineering Division of the Stone & Webster Company, has contributed a timely article to the August issue of the Stone & Webster Journal entitled "Cheap Water Power and Load Factor". Mr. Hays, it will be recalled, was formerly general manager of the Mt. Whitney Light & Power Company of California. In his article he derides the idea of emphasizing "cheap" water power and says the real thing needed for industry above all is not necessarily cheap power but rather continuous, ample and sufficient service to meet the demand of industrial load.

Wigginton E. Creed, president Pacific Gas & Electric Company, is the author of a series of seven short articles on subjects vital to the public service of California, particularly the problems in whose satisfactory solution the public service corporations and the public they serve are mutually concerned. The articles deal with "How Public Service Rates are Fixed," "The Relation of Water Power to Industrial Development of California," "The Question of Public Ownership of the Public Service Companies," "Three Policies for the Public Service Industry," "What are the Public Service Companies" and "How Public Service Companies are Financed."

C. A. Semrad, general manager of the Western Light and Power Company at Boulder, Colo., presided over the eighteenth annual convention of the Colorado Electric Light, Power and Railway Association which was held at Glenwood Springs, September 19, 20 and 21. The convention was held in conjunction with the Rocky Mountain Division, N. E. L. A. During the past year Mr. Semrad has been at the helm of the association and has accomplished big things in Colorado. In few western



C. A. SEMRAD

states have the strides along electrical lines been so marked as they have in the Rocky Mountain district. Mr. Semrad was a member of the class of 1908 at the University of Wisconsin. He was with the Union Light and Power Company of St. Louis for a year and then went with the Northern Colorado Power Company. Subsequently he has been general manager of the Cheyenne Light, Fuel and Power Company and in 1918 he took his present position with the Western Light and Power Company.

M. T. Dolman, formerly in charge of the Promoting Sales Department of the Pacific States Electric Company, has re-entered the advertising agency field, with offices in the new Call Building, San Francisco. Associated with him is H. C. Hopkins, advertising representative of the San Francisco office of the Westinghouse Electric and Manufacturing Company.

Earl T. Millham of Salt Lake City has resigned his position as secretary of the Rocky Mountain Electrical Co-operative League, and in his place has been appointed Chas. H. Talmage, who was until June 1st a member of the Advisory Committee and manager of the local office of the Western Electric Company. Mr. Talmage took over the position September 1st, 1921. Mr. Millham's future activities are as yet unannounced.

Emil Newman, consulting engineer for the San Joaquin Light & Power Corporation, has just returned from a visit of three months to Norway and Sweden. Born in Sweden, this is the first trip he has made to his home in forty-eight years. He returns with a number of photographs of interesting hydroelectric installations in his native country and has many interesting stories connected with the advance of electricity there.

J. Vipond Davies, president of the United Engineering Society and consulting engineer who recently reported on the San Francisco bridge situation, will preside at a mammoth engineering meeting in New York City to be held on the evening of October 10th to welcome home the delegation from the American Engineering Societies that were sent to Great Britain and France during June. Many distinguished engineers will be present at the dinner.

S. J. Lisberger, electrical engineer for the San Francisco District of the Pacific Gas & Electric Company, has been appointed chairman of the engineering committee of the Pacific Coast Division, N. E. L. A. for the coming year. Mr. Lisberger has served on important engineering committees of the American Institute of Electrical Engineers and the National Electric Light Association in past years and his work for the California Industrial Accident Commission, in which he served as chairman of the Advisory committee for their new electrical utilization orders, has been of much helpful service to the West. It is not known as yet just what particular emphasis will be made in engineering investigations for the coming year, but it is felt that Mr. Lisberger's thorough grounding in investigations will prove of great helpfulness in the work which he will institute for the Association during the coming months.

H. V. Michener, for the past six years Northwest stores manager for the Western Electric Company, in charge of the corporation's branches at Seattle, Portland, Spokane and Tacoma, has been transferred to a higher position with offices in San Francisco. He is now stores manager of the telephone department of the company for the entire Pacific Coast. Mr. Michener identified himself with the Western Electric Company in 1906 in the Pittsburg office,



H. V. MICHENER

following his graduation from Adrian College. Subsequently he has been on the Comptroller's Staff and the Efficiency staff of the company. During his connection with the company he has visited 75 per cent of the branches, a feat considered highly enviable by his associates. In his new position he will have supervision over the activities of more than a thousand Western Electric employees.

H. D. Loveland of the California State Railroad Commission who was chosen as a delegate to the annual meeting of the National Association of Railroad and Public Utility Commissioners in Atlanta, Ga., on Oct. 11, will be unable to attend due to illness.

R. A. Hart, federal supervising engineer of drainage investigations for the department of agriculture, returned to Salt Lake on August 11th, after a trip into Wyoming and Montana. Mr. Hart has been visiting several drainage districts.

W. G. Partridge, of the Southern California Edison Company, who has done such effective work in launching the various Edison Company employee organizations, has been transferred from his work at the Redondo Steam Plant to the Greater Service Department of the Company.

F. W. Peake, Jr., a graduate of Stanford University, and one of the research engineers of the General Electric Company, is among the three engineers who are largely responsible for the wonderful research attainments recently announced in Pittsfield, Mass., concerning the 1,000,000-volt, 60-cycle experimental tests that have been made at that place.

Pedro Diaz, for several years head of the Western Machinery Company of Los Angeles, has resigned his position to establish himself in the City of Mexico as a manufacturer's representative. Mr. Diaz has been appointed exclusive agent in the Republic of Mexico for the Western Machinery Company and the Layne & Bowler Corporation, both of Los Angeles.

W. R. Alberger, vice-president and general manager of the San Francisco-Oakland Terminal Railways, has left for Atlantic City where he will attend the annual convention of the American Electric Railway Association from October 3 to 6. Others who will attend the annual convention from the San Francisco Bay region are M. McCants, assistant general manager of the Market Street Railways, San Francisco, and Fred Boeken, president of the San Francisco Municipal Railways.

R. E. Caldwell, state engineer of Utah, has returned from a trip to Duchesne and Uinta counties, where he went to study the distribution of the waters of the Duchesne, Lake Fork and Strawberry rivers for irrigation purposes. Mr. Caldwell also looked up the matters of water filings for the Indian lands, on which the Bureau of Indian Affairs is now seeking to prove up. The matter is also before the federal courts but is held in abeyance, pending decision by the state engineer of Utah.

Arthur Kempston, former chief of the Department of Electricity of San Francisco, has been appointed field representative of the California Electrical Cooperative Campaign to have his headquarters in Stockton, California. Mr. Kempston will devote his energies particularly to the San Joaquin and Sacramento Valleys as far south as Bakersfield and as far north as Chico. Mr. Kempston goes to his new office with a splendid background of attainment in the contractor-dealer field and in other activities of the electrical industry in California.

A. C. McMicken, sales manager of the Portland Railway, Light and Power Company, is saying "I'll tell the world" in the accompanying picture, following a trip to the top of Mt. Rainier during the recent convention of the Pacific Coast Division of the Electrical Supply Jobbers' Association at Mt. Rainier National Park. Mr. McMicken was one of



A. C. McMICKEN

a party of electrical men who tried to reach the summit of the mountain and got lost in a snow storm when within a thousand feet of the top of the second highest peak in the United States. The guide got lost, the party lost the guide and all had a highly exciting time before they reached the lower levels. This is the way "Mac" looked when he returned.

Obituary

William D. Kohlwey of the Kohlwey-Smith Electrical Company, San Francisco, one of the most active contractor-dealers in California, died after an illness of several months at his home in San Francisco on September 25th. Through his active participation in the affairs of both the local and state contractor-dealers associations, Mr. Kohlwey had many friends throughout the electrical industry. His loss will be keenly felt by those who knew and cared for him. He was also a member of the San Francisco Electrical Development League.

Charles W. Davis, vice-president and general sales manager of the Standard Underground Cable Company, Pittsburgh, Pa., died recently in New York City. Mr. Davis was known throughout the electrical industry as an expert on the design, manufacture and installation of electric cables. The many men in the West who knew him and had dealings with him will deeply feel his loss.

J. M. Smith, sales manager for the Ivanhoe-Regent Works of the General Electric Company, suddenly passed away recently at Auburn, New York. It will be recalled that Mr. Smith was one of the speakers during the recent General Electric Conference that toured various Pacific Coast cities, and his loss will be keenly felt among men of the industry throughout the West.

Construction News and Industrial Developments

Suggesting to the Engineer, Contractor, Manufacturer, Dealer, Agent and
All Business Men Opportunities for New Business

THE PACIFIC NORTHWEST

PORTLAND, ORE.—Bids for the construction of a \$130,000 hospital in the Mount Tabor district are being called for.

COTTAGE GROVE, ORE.—A \$50,000 issue of bonds for a municipal electric lighting system carried at a recent election.

CHEHALIS, WASH.—The Western Storage Battery Co., by R. J. Gorman and J. P. Russell, has filed articles of incorporation.

THE DALLES, ORE.—Plans for the construction of a \$400,000 steel bridge over the Columbia river near The Dalles is under consideration.

HOQUIAM, WASH.—The city of Hoquiam has called for bids for the improvement of M and I streets by placing thereon iron poles and boulevard lights.

PORTLAND, ORE.—The Port of Portland Commission has awarded a contract to the General Electric Company for furnishing a 1600-hp. motor for a booster system at a cost of \$11,218.

PORT TOWNSEND, WASH.—The supervising architect at Washington, D. C., will receive bids up to 3 P. M., October 12, for lighting plant, wiring, etc., at the U. S. Quarantine Hospital.

CHEMAWA, ORE.—The Government has called for proposals for the construction of a brick power house and improvements to the heating plant at the government Indian school at this place.

ASTORIA, CAL.—It is probable that the mill of the Prouty Timber Co., at Timber, which was destroyed by fire recently with a loss of \$150,000 throwing 200 men out of employment, will be rebuilt.

COTTAGE GROVE, ORE.—The Public Service Commission of Oregon will conduct a hearing at this place October 7 to investigate a proposed increase in rates of the Cottage Grove Electric Company.

BUCODA, WASH.—The North Coast Power Company has completed an installation to supply the Bucoda Coal Mining Co., of this place with 200 hp. to operate compressors and hoists in their coal mine.

PORTLAND, ORE.—The Public Dock Commission has authorized the construction of an addition to municipal terminal No. 1, which will cost approximately \$100,000, to provide additional port facilities.

BELLINGHAM, WASH.—The Bellingham Steel Corporation which has purchased ten acres in Happy Valley, plans to erect a steel plant, according to E. L. Prather, representing C. W. Melville & Co., Seattle.

PORTLAND, ORE.—Factory buildings estimated to cost more than \$25,000, will be constructed immediately by the Concrete Pipe Company of Portland on a site recently purchased in the Albina industrial tract.

ABERDEEN, WASH.—Contract for the construction of pier No. 1 for the Grays Harbor Port Commission has been awarded the Grays Harbor Construction Co. The amount of the contract was approximately \$150,000.

ASTORIA, ORE.—The Astoria Box Company has announced that it will replace its factory recently destroyed by fire with a modern saw-

mill having a capacity of 150,000 feet of lumber per day and which will cost \$150,000.

PORTLAND, ORE.—The commissioners of Multnomah county are considering the construction of a new steel span over the Willamette river at Portland to replace the present Burnside Bridge, to cost approximately \$5,000,000.

WALLA WALLA, WASH.—Walla Walla will soon have a new city reservoir as a result of a recent election authorizing an increase in interest rate on bonds. The reservoir will be built of concrete and will cost not to exceed \$200,000.

SALEM, ORE.—The North Canal Company, of Portland, has filed articles of incorporation with a capital stock of \$250,000. The incorporators are J. C. Potter and A. L. Grutze. They will engage in the business of constructing irrigation and power systems.

PORTLAND, ORE.—Contract will soon be let for the construction of a \$100,000 tire factory for the Columbia Tire Corporation, in the Kenton industrial district. The plant will be electrically operated throughout and will require from 600 to 800 hp. in motors.

VANCOUVER, WASH.—It is rumored that the Standifer shipyard built during the war at a cost in excess of a million dollars will be converted into a large steel fabrication plant for the construction of steel bridges, buildings and general steel construction work.

PORTLAND, ORE.—The Multnomah County Commissioners are considering the abandonment of the present heating and lighting plant in the Court House and the purchase of steam heat and lighting and power service from local utilities at a purported saving of \$6000 per year.

ST. HELENS, ORE.—Work has been started on a sawmill and veneer plant which will be located on a portion of a former shipyard site at Columbia City. The plant, which will cost about \$100,000 and furnish employment to fifty men, is being built by the Western Spar Company of Portland.

PORTLAND, ORE.—The Central Coal & Coke Co., a lumber marketing firm of Kansas City, Mo., which recently purchased the Oregon American Lumber Company's 27,000-acre tract of timber on the Nehalem, plans to erect mills and manufacture lumber, as well as continue logging operations, according to Charles Keith, president of the concern.

OLYMPIA, WASH.—Incorporation papers have been filed here by the Pacific Suspended Monorail Railways Inc., Vancouver, Wash., capital \$10,000. The company proposes to construct and operate a monorail railway from Portland to Newport, Ore., with branches to other Oregon points. J. H. Fitzgerald, Robt. F. Robson, A. M. Crawford, are the incorporators.

THE PACIFIC CENTRAL DISTRICT

MERCED, CAL.—The city trustees have approved specifications for the installation of an electrolier system in various districts of the city.

SACRAMENTO, CAL.—Charles Harlowe, Jr., of San Francisco, was awarded the contract for the excavation of the basin at the new municipal filtration basin on a bid of \$23,000.

SAN MATEO, CAL.—The city trustees have adopted a map of the zone to be lighted by modern electrolier system as prepared by Engineer Whitehead. Sixty standards will be installed.

RED BLUFF, CAL.—T. H. Ramsay has announced that plans for a 15,000-acre irrigation system project in Butte and Tehama Counties are proceeding rapidly. Surveys have already been completed.

VISALIA, CAL.—The California Packing Corporation has decided to erect a large olive packing plant at Visalia, leaving the plant at Lindsay closed indefinitely, according to report received here.

SAN FRANCISCO, CAL.—The Insulation Engineering Company was recently incorporated in San Francisco with a capital stock of \$10,000, shares \$10 each, subscriptions \$30. The directors of the company are R. B. Macdonald, T. Baker and C. M. Mardel.

TURLOCK, CAL.—The joint boards of the Turlock and Modesto Irrigation districts have accepted plans for the power house that is to be erected at the Don Pedro Dam. Specifications are being printed although no date has been set for advertising for bids.

VALLEJO, CAL.—The Paramount Motor Company will locate a motor assembly plant here in the near future according to word received at the local Chamber of Commerce. A deal is under way for the acquisition of a suitable site and plans are being prepared for the factory.

VALLEJO, CAL.—Promoters of a scheme for an irrigation district are planning to lease a large tract between here and Napa. One of the first steps will be the installation of a dam and the construction of a reservoir. Water would be partly supplied during the dry season from deep wells in the Sescol district.

SACRAMENTO, CAL.—W. F. McClure, head of the division of engineering and irrigation of the state department of public works, says 25 applications for formation of new irrigation districts have been received by his office since last November. The formation of districts in Ventura and Los Angeles counties are projected in the latest two applications.

MARYSVILLE, CAL.—The Ellamore Ice Cream Company has received authorization from the Commissioner of Corporations to spend \$275,000 for the establishing of factories at Sacramento and Red Bluff, according to President W. J. Moore. The company plans to retain Marysville as headquarters and to erect a factory here at a cost of \$30,000.

THE PACIFIC SOUTHWEST

BRAWLEY, CAL.—Harry Staub is planning the erection of a large cannery here for the purpose of canning the fruit and vegetables raised in this district.

LOS ANGELES, CAL.—The Arcadia Packing Co. plant at Arcadia was demolished by fire with a loss of \$40,000. Mrs. Clara Baldwin Stocker was the owner.

SANTA ANA, CAL.—Plans for a new Orange County jail were approved and bids will be received November 1st. The structure will cost \$100,000 exclusive of fixtures.

GLENDORA, CAL.—The special bond election to provide funds for improvements was carried by a vote of 5 to 1. Approximately \$60,000 will be spent at once for extensions to water mains.

LOS ANGELES, CAL.—The Ward Baking Company have under consideration a new baking plant with a daily capacity of 100,000 loaves, with a total investment of \$3,000,000 in property and equipment.

LONG BEACH, CAL.—The Chamber of Commerce announces that the Fredonia Window Glass Company will establish a factory here. The site has been purchased, and a new factory will be erected at an early date.

LOS ANGELES, CAL.—Bids have been opened by the Board of Supervisors for the construction of the Lancaster water system and referred to the district engineer in Antelope Valley. Bonds for \$60,000 have been voted for the system.

LOS ANGELES, CAL.—An ice cream plant costing \$700,000 will be built by local capitalists. Electric trucks will be used exclusively for the delivery system, an order for ten Walker Electrics is said to have been placed.

LOS ANGELES, CAL.—The Monolithic Hollow Concrete Form Corporation, located at 326-330 Pacific Finance Bldg., contemplates erection of a factory building at Porter St. & Santa Fe Tracks for the manufacture of concrete forms.

LOS ANGELES, CAL.—The plans for the new \$2,000,000 Public Library are attracting the attention of architects far and wide. Competitive design open to any and all architects will probably be decided upon at an early date.

LOS ANGELES, CAL.—Plans are under consideration for the erection of a branch automobile factory to cost approximately \$1,000,000 according to an announcement made by Oliver C. Temme, president of the Temme Spring Corporation.

LONG BEACH, CAL.—Approximately \$526,000 is to be spent in widening the channel of Los Angeles harbor, the contract being awarded by the United States Government to the San Francisco Bridge Company. The work will require six months to complete.

EL CENTRO, CAL.—The destruction of the Westside main canal by flood, may force the Imperial Irrigation District into taking over the canal and repairing it in order to furnish water supply to people in the districts affected. No estimates of cost have been made.

SAN DIEGO, CAL.—The San Diego Railway Company is planning an extension of its lines along Third street. Steel ties will be used instead of wood throughout the entire construction. The rail joints are to be welded by the Lincoln process. The street will also be paved between the tracks.

SANTA FE, N. M.—A meeting has been held by residents of this district to discuss a proposed irrigation project which is to be constructed north of here. It is stated that with the building of a large reservoir, it would be possible to irrigate 250,000 acres in the valley between this city and Artesia.

SAN PEDRO, CAL.—Work on the new docks for the Salt Lake Railroad and the motor-truck highway together with the bridge across the channel to Terminal Island will all go forward at once as the funds are now available. This is the beginning of an additional \$5,000,000 program for Los Angeles harbor.

LOS ANGELES, CAL.—The Arro Plane Company will erect a new plant on the site of the Goodyear Flying Field, and will manufacture 30 passenger airplanes. First unit of factory will be under construction by the 1st of October, according to Oliver K. Jeffery, President and J. D. Hill, Vice-president and engineer.

PHOENIX, ARIZ.—The Pacific Creamery which has been closed for years because the farmers sold their dairy herds when they went

wild over cotton, has again opened for business and creamery products are rapidly regaining their former position of importance. Armour and Company own the largest creamery in this vicinity.

MIAMI, ARIZ.—Much interest centers around the activity of various mining companies. New buildings, power plants and exploration work will be started at once by Louis D'Or Mining and Milling Company. Silver working to the north of Miami is also under way and more developments are expected by those in position to know.

LOS ANGELES, CAL.—It is announced that James G. Warren will subdivide the orchard lying in the triangle formed by Hollywood Blvd., Prospect and Hilhurst Streets. Streets will be laid and sidewalks, gas mains, electric lights, etc., installed. The construction of large apartment houses, flats and bungalow courts are planned. Stores will be built on Hollywood Blvd.

LOS ANGELES, CAL.—Concessions for building a \$10,000,000 pipe line from Puerto to points north, following the Tehantepec Railroad, has just been granted by the Mexican Government to Clay T. Yerby, a resident of Seal Beach. It is to be a ten-inch pipe line and work will be started at once. This line will make it possible for the Pacific Fleet to obtain fuel oil from the Mexican Fields.

PASADENA, CAL.—Plans are being prepared for the building of a sewage partial purification plant to be located on the City Farm, as announced by City Engineer E. P. Dewey. When the plant is in operation, water will not be used for some time but it is possible in the near future to use the water for irrigation purposes. The city farm is located between the cities of San Gabriel, Alhambra and Monterey Park.

LOS ANGELES, CAL.—The Sespe Light & Power Company plan the construction of eight dams on the Sespe River and six on the Piru, contemplating an expenditure of \$10,000,000. After the water stored up by dams is used to generate electricity it will be available for irrigation and piping to cities. The power company has a contract with Bent Brothers, who are now building roads preparatory to bringing material and starting work on first unit.

PHOENIX, ARIZ.—First steps have been taken in the formation of a district west of Phoenix by the Garrick and Nangham Agua Fria Lands and Irrigation Company. Surveys have been started. The contract provides for equipment to pump 70,000 acre-ft. of water a year from underground waters of that district. Arrangements have already been made with the Shattuck Construction Company of San Francisco, according to engineer Linden to take over all the construction work on the new project, which will require an outlay of approximately \$1,800,000 to be invested in pumping plants, syphons across the Agua Fria, transmission lines and canals. Work will start not later than March 1st, 1922.

THE INTERMOUNTAIN DISTRICT

CALDWELL, IDA.—F. L. Evans, secretary of the Pioneer Irrigation District, will receive bids until October 4 for the construction of 4500 lineal feet of canal. A certified check for \$3000 must accompany each bid.

RYEGATE, MONT.—Petitions are being circulated for the formation of a new irrigation district comprising 19,000 acres near here. A preliminary survey has been made and the estimated cost of the project set at \$30 an acre.

BOISE, IDAHO.—The Idaho Power Company, it is reported, will begin construction immed-

ately of a 25-mile, 44,000-volt transmission line to supply power to the new electrically operated gold dredge to be built by the Hammond Engineering Co., of San Francisco, at Mt. Home, Idaho.

OGDEN, UTAH.—Improvements totaling \$100,000 are being made in Ogden by the Mountain States Telephone and Telegraph company. These improvements will be completed within the next six months, and will take care of the increasing demand for new telephones, together with increasing business.

LEWISTON, IDA.—J. P. Weyerhaeuser and E. H. Onstead of the Weyerhaeuser Timber Company are in Lewiston inspecting millsites and looking over the timber situation in the Clearwater district where they are heavily interested. They contemplate the erection of a large sawmill either at Lewiston or at some other point in that district.

PIOCHE, NEV.—Work is progressing rapidly in the repairing of the power plant at the Amalgamated Pioche mining company's No. 1 shaft, and the widening of the new shaft will soon be pushed with vigor. The work is being done by the Combined Metals Mining company, preparatory to the resumption of shipments from the big developed bodies of silver, lead and zinc ore.

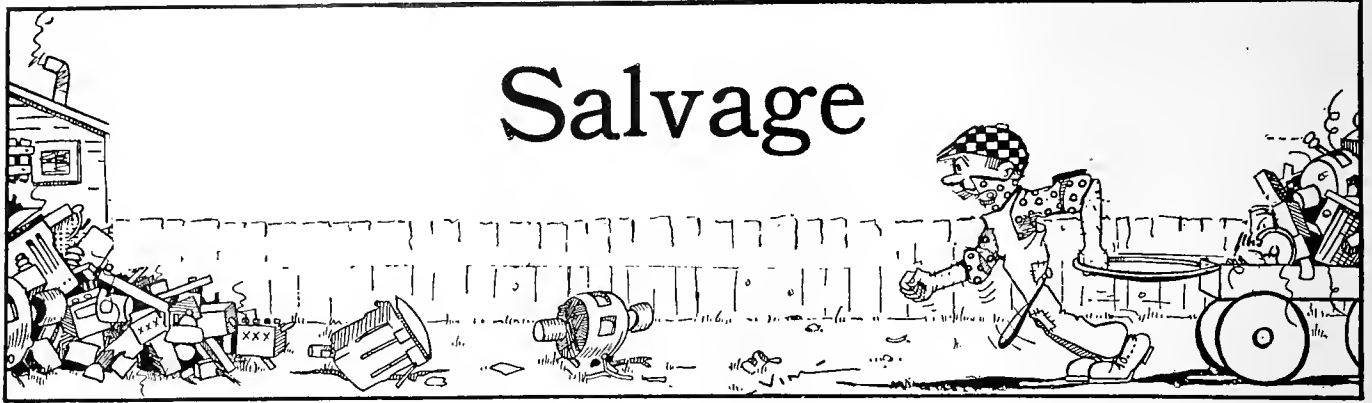
BOISE, IDAHO.—Work is to be resumed immediately to prepare the foundation for the dam of the Black canyon irrigation project, in the southwestern part of Idaho. The dam will form a reservoir in which water from the Payette river will be stored for distribution to the project. The project is one of the most important irrigation units that the government has in view in the state of Idaho.

SALT LAKE CITY, UTAH.—Application for the diversion of 17.68 cubic feet of water from the Duchesne river has been made to the Utah state engineer by Alfred J. Childs in behalf of the Indians on the Uinta reservation for the purpose of aiding in the irrigation of 21,000 acres of land in the reserve. The application is supplemental to that made by Captain C. G. Hall, acting as Indian agent, in June, 1905.

BUTTE, MONT.—Under the license granted by the Commission on August 29, the Rock Creek Power Company, Missoula, Montana, will build a log diversion dam, a three-mile conduit of open cut, flume and wood stave pipe construction, and a power house, operating under a head of 6.6 feet. Power will be developed by means of two 1,000-horsepower turbines to supply agricultural and public utility needs of Missoula and adjacent communities.

POCATELLO, IDAHO.—Application for a permit to construct a dam for the purpose of impounding water for irrigation purposes, at an estimated cost of \$200,000 has been filed with the state department of reclamation by the Malad Reservoir company. The proposed reservoir will have a storage capacity of 14,000 acre-feet per annum for use on 21,300 acres of the Malad Reservoir company's project near Malad in Oneida county. The proposed reservoir will derive its water supply from the Little Malad river.

SALT LAKE CITY, UTAH.—Definite steps are being taken toward the erection of Salt Lake's new federal reserve bank building. Estimates have been sent to the San Francisco office, where plans are to be prepared before January 1 and forwarded to Salt Lake for the approval of the Salt Lake officials. In all probability the building will be a four-story structure with full basement, and will be erected on the site of the old Amelia Palace at South Temple and State Streets, which was purchased a few months ago by the government from the Mormon church.



LIGHTS AND SHADES

The San Francisco Electrical Development League recently issued a bulletin announcing a program by Judge Lile T. Jacks which would "bear special reference to the betterment of general conditions in the police courts of San Francisco, due to the more efficient lighting service, this in turn made possible through the installation of better lights and proper reflectors." What the Judge had actually submitted for his subject, was "Lights and Shades of the San Francisco Police Courts"—and needless to say, his talk had nothing to do with lighting units or reflectors.

* * *

Apropos of the latest in electrical homes designed by a man in Nebraska, which included a built-in electrical phonograph, designed to look like a book-case, we read with interest in the "For Sale" ads of the Sunday paper that a Mr. Smith is offering "a good cow pasture with perpetual spring, airy well built barn, electric light plant and eight cows conveniently located." We would select one for the nursery, designed to look like a night lamp, one adjacent to the refrigerator with the outward appearance of a Hoosier cabinet, one as a cream pitcher attachment to the electric coffee urn and the others built in as a frieze for the dining room.

* * *

Although posters of various kinds form the chief medium of advertising in China, the United States Department of Commerce reports that some enterprising American advertisers have recruited the services of the ancient travelling story-tellers and many of them may now be heard weaving into their tales the stories of new brands of cigarettes, kerosene—and, who knows?—the advantages of convenience outlets.

* * *

GREAT BAKERSFIELD BOMB MYSTERY

The police force of Bakersfield was called out the other evening to investigate a small box emitting a ticking noise which was found attached to the residence of one of the leading citizens. In order not to risk premature explosion of the bomb, if bomb it were, the owner detached the wooden container to which wires were found attached and threw it into the underbrush. Here the police found it and, standing at a safe distance, fired several shots in its general direction. Nothing resulting, a nearer examination was made and it was found that the ticking had stopped. Immediate danger being thereby removed, it was felt safe to convey the box to headquarters. Here an unexpected jolt started it ticking again and for some time excitement prevailed. No damage resulted. The only clew to the mystery is the fact that D. L. Wishon, district manager of the San Joaquin Light and Power Corporation has presented a bill of damages to the owner and the city police department for removal and destruction of one electric meter from the above mentioned residence.

ITEMS OF INTEREST IN THE NEWS

Import of Cheese Forbidden in Czechoslovakia.

* * *

Spotty Decline in Eggs; Butter Rises.

* * *

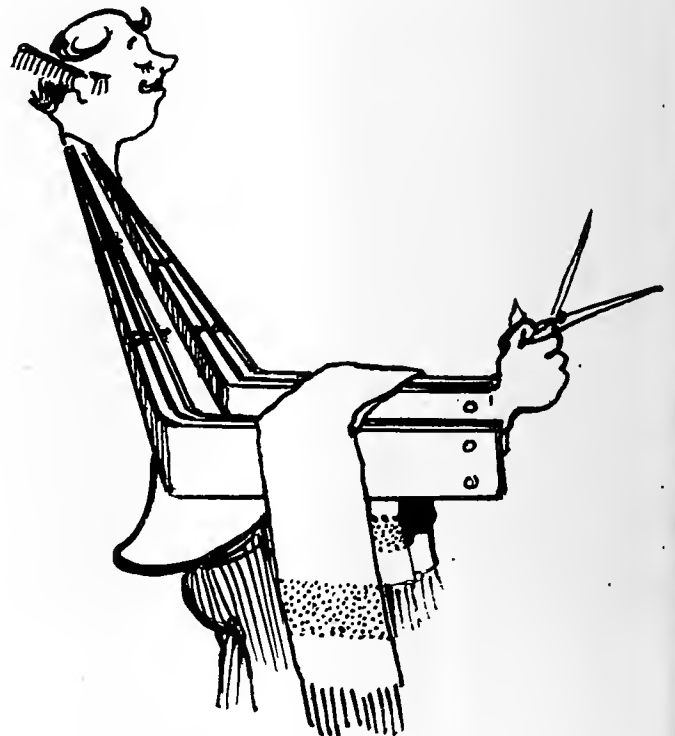
The Portland Chamber of Commerce is soliciting contributions of pictures "suitable for the ladies' waiting room." It is understood that the ladies have put in a petition to be allowed to view the gentlemen's smoking room.

* * *

Three all drawing-room trains are being used to convey the members of the American Bankers' association to their national convention in Los Angeles. Does the Pullman company provide the chips as well?

* * *

ELECTRICAL HYBRIDS



XIII—The Electrical Busbarber

The busbarber's found in most every station;
To the running of things he bears vital relation;
Although in the background, he's there with the lamps on
And could cut off the power of cities, like Samson.

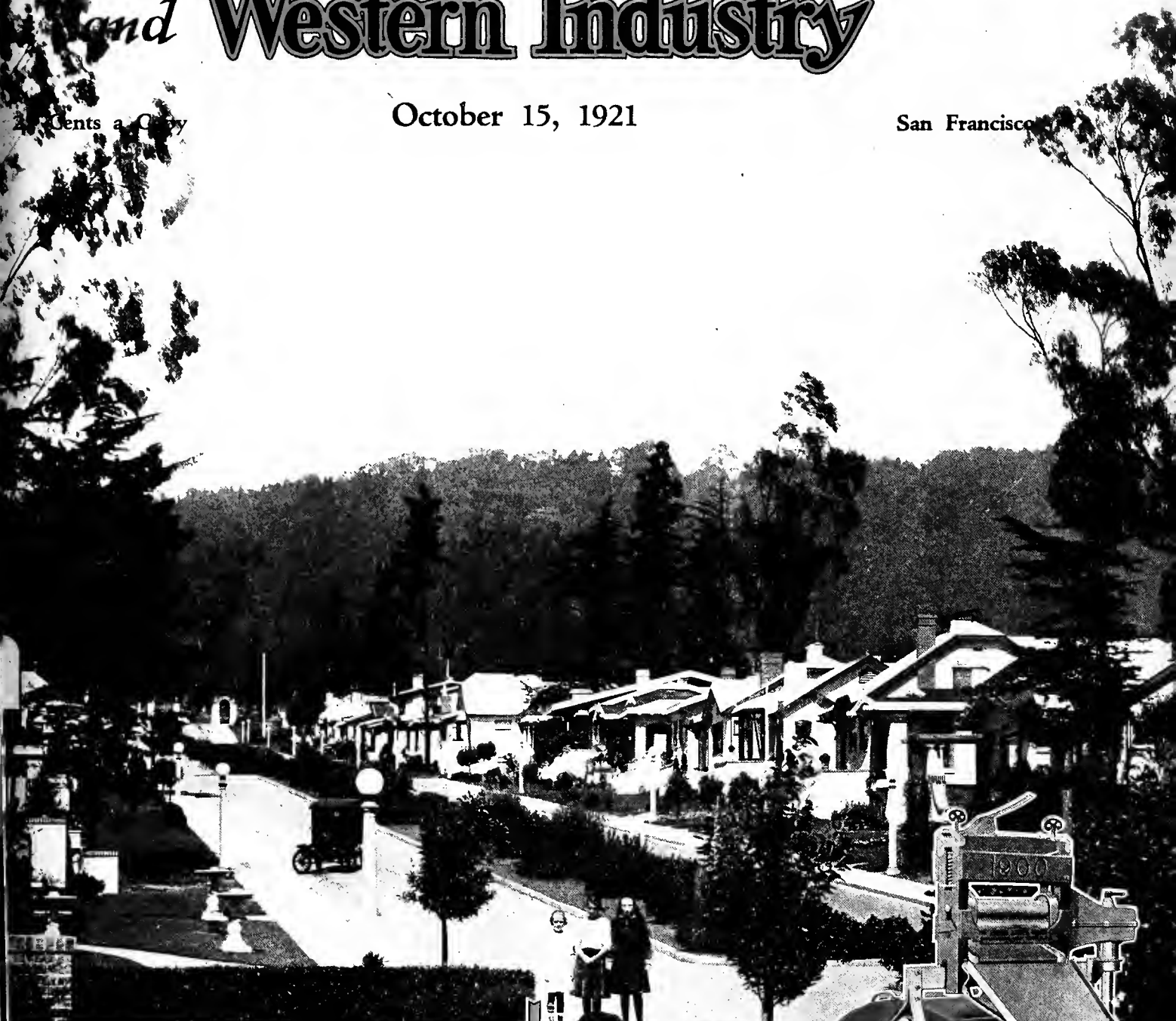
He's a herpicide vender—at least, a hair-raiser;
Though surprisingly silent, he shocks the rash gazer.
His charges are high—and although he's no knave,
If you should come near him, 'twould be a close shave.

Journal of Electricity and Western Industry

25 Cents a Copy

October 15, 1921

San Francisco



THIS newly-built area in Westwood Park, San Francisco, typifies the progress being made in western home building. Every home has its prospect for a 1900 Cataract Washer.

The famous figure 8 motion is an exclusive feature of the 1900 Cataract Washer.

—the solid copper, tin-plated, rust-proof —the swinging, reversible wringer, and the specially designed motor—these are all strong selling features. There is nothing to lift out, nothing to put out of order, nothing to clean.

The 1900 Cataract Washer will get—and hold—your business for you. Write for agency details.

The water swirls through the clothes in a figure 8 movement four times as often as in the ordinary washer.

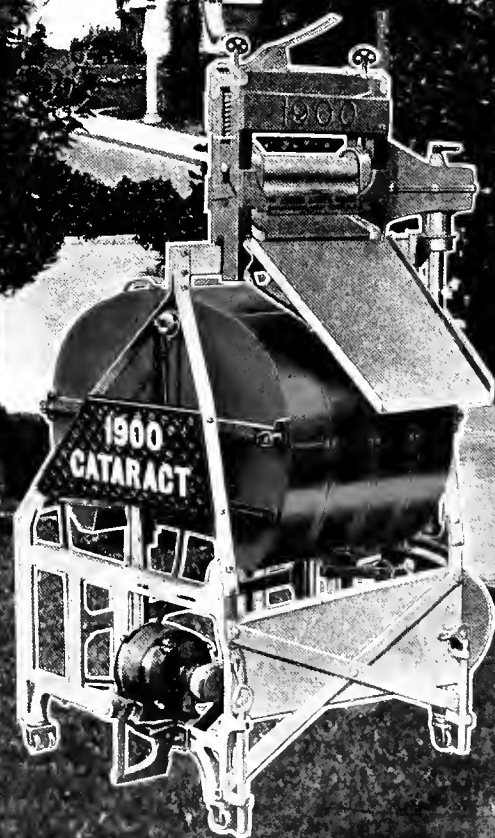


1900 CATARACT WASHER

1900 WASHER COMPANY, 203 Clinton Street, Binghamton, N. Y.

Canadian Factory and Office

CANADIAN 1900 WASHER COMPANY, 357 Yonge Street, Toronto





"Macomb" low tension pin type insulators are wet process insulators of high quality --- the last word in insulator manufacture.



Try them on your next job --- we carry adequate stocks in our three Coast warehouses.

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LOS ANGELES

183-199 First Street
SAN FRANCISCO

526 First Avenue South
SEATTLE

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A semi-monthly chronicle of western events, advocating the economy, efficiency and convenience of electric power for all industries of the West—manufacturing, agricultural, mining, merchandising, home building and home making. Interpreting the value of electrical development to the business and financial man, the industrial man, the power man, wholesaler and retailer, contractor and constructor, engineer and home owner.

Because of the abundance of water power in the West susceptible of economical development, a dependable, uninterrupted supply of cheaper electric power is assured for these industries. The basic industry of the West—hydro-electric power generation—for which Journal of Electricity and Western Industry is the spokesman, is therefore logically and inseparably linked to the growth and prosperity of all phases of our daily life and business.

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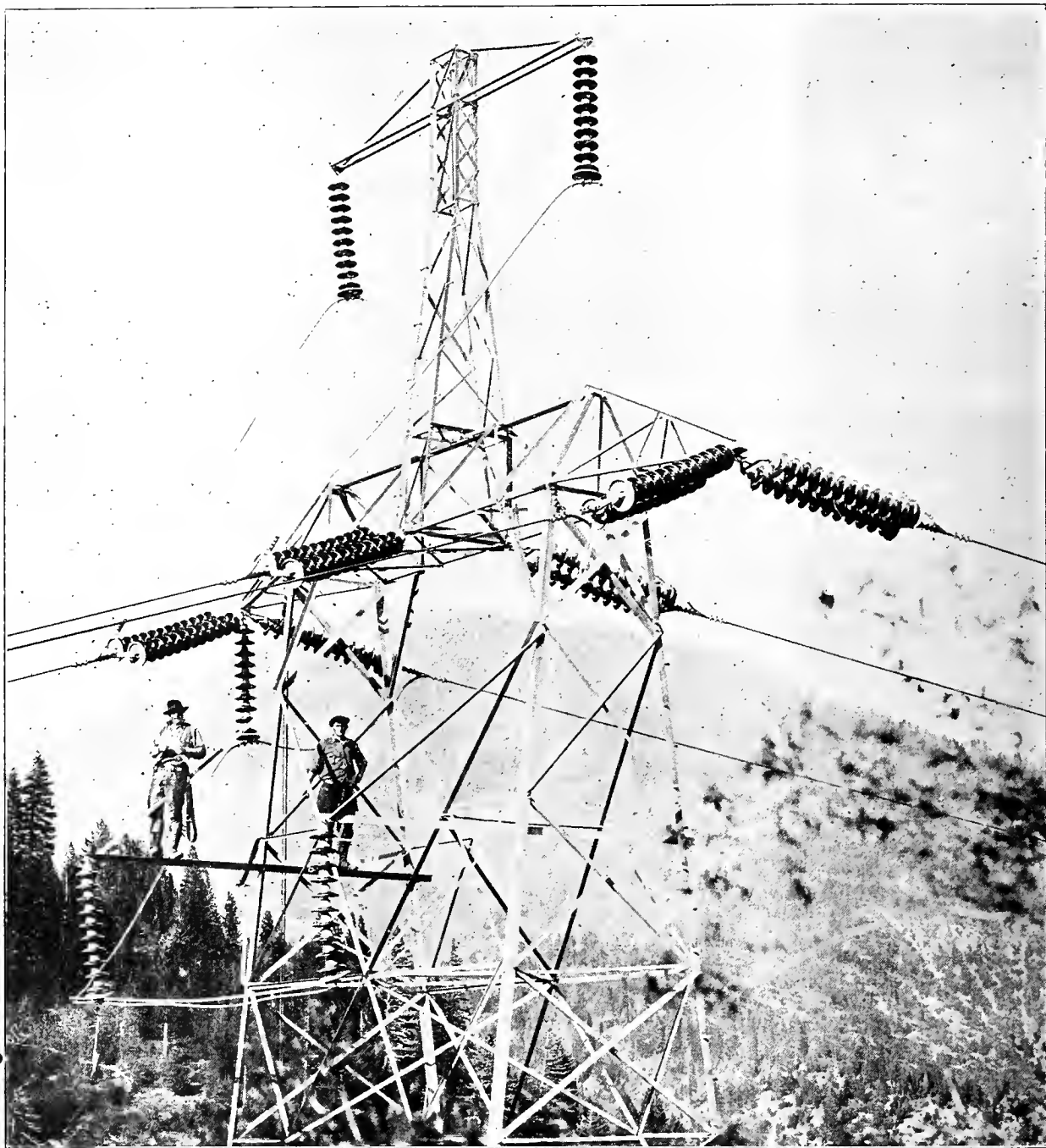
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The Practical Overcoming of Inductive Interference

THE WEST, due to its pioneer work in the transmission of hydroelectric energy over longer distances and at higher voltages than have been attained elsewhere in the world, has had to solve the problem of inductive interference almost single handed. The work of the California Inductive Interference Committee, operating under the California Railroad Commission, has become a classic throughout the world in the matter of inductive interference. Here is shown the method of transposing the wires to overcome inductive interference on the world's highest voltage transmission system—that of the Great Western Power Company,

which operates at 165,000 volts. An extension was placed on the tower to support the two wires crossing from one side to the other. The third wire was carried around the tower and under the wires to its proper place. Two additional brackets with suspension insulators were placed on the tower to hold this lower wire in place. This third jumper can be traced from the outside leg at the back of the tower, through the suspension string of insulators on the arm, across the two strings of insulators on the face of the tower and up to the nearest wire. A piece of $\frac{3}{4}$ -in. pipe is used to support the conductor between the two strings of insulators where it crosses the face of the tower.

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The Inalienable Right of Men to Organize

NOT only is the right to organize an inalienable right of man, but our composite present day life is of such a nature as to make organization a factor of prime necessity. No organization can, however, long endure with only its immediate selfish interests held in view. That employer's association which does not in thought and in deed embrace the employe, and particularly hold the community interest ever in the fore front, must fail of highest attainment in usefulness and in the justification of its existence.

So it is also with the problem of organized labor. When crafts organize and restrict apprenticeship training so as to create an artificial demand for service from that craft, an uneconomic breaking of balance in the great law of supply and demand is brought about that rightfully creates resentment in the community served by that craft and greatly impairs public confidence in such institutions. In the same way any effort to lower efficiency of workers or to limit production of the worker below that of natural expression is directly opposed to the highest development of community interest, and must bring its reaction in public distrust, as it has done in the past in San Francisco, Seattle and other Pacific Coast cities.

These are two of the things that must receive careful and thoughtful attention on the part of organized labor, particularly in the West, if it is to continue as a factor in the economic development of this region.

The Pacific Coast

Electrical Association

A MEETING is to be called of the Pacific Coast Geographic Division, N. E. L. A., to consider the changing of the name so that it will read "The Pacific Coast Electrical Association" with some statement following in which will be set forth the fact that this association is affiliated with the National Electric Light Association. It would seem that the time has come for such a change to be made. The Pacific Coast Division, N. E. L. A., has before it a tremendous year of possibilities, and all the power of a name that the public can readily understand and that will carry local influence combined with national prestige, will be needed.

It would seem also that as fast as possible the activities of the association and the eligibility to office and to membership should be so broadened as to embrace all branches of the industry upon an equal footing. It takes time, of course, to accomplish changes of this nature and it may be best to postpone some of these latter questions for future

consideration. However, in the question of the name there should be no delay in its adoption at the earliest possible moment.

Western Port Facilities

to Meet Trade Expansion

THE shifting of large fleets from the Atlantic trade with Europe to the Pacific coast trade, has called attention in a forcible manner to the flexibility of water transportation and the absolute necessity of Pacific ports being equipped with every device for the economical transference and warehousing of freight. Standardization of facilities and consequent uniformity in port charges will tend to develop a maximum benefit for the entire West.

The war blockade of the Atlantic brought several items of eastern commerce through the Indian route to the Pacific coast, an arrangement which has proved so satisfactory that it is being maintained. So important is this commerce that several of the European countries hitherto unrepresented on this coast are establishing consulates. Trade with the

Atlantic ports through the Panama Canal should be the means of securing for the West a larger part of the \$20,000,000 per month export business which the United States is sending to Mexico. By the same means should we import deficiencies in our production to balance the exports, thereby establishing a permanent and growing commerce.

Imports must balance exports geographically as well as financially. It is for the best interests of the West that all Pacific Coast ports be brought to a condition of up-to-date efficiency. It is only by offering the attractions of prompt freight handling and reshipment conveniences that further commerce can be attracted.

An Unexploited Field in the Electrically Propelled Vehicle

CERTAIN short haul conditions not only in city districts but also in rural communities throughout the West, suggest the thought that the switch-over from the gasoline engine as a prime mover to the storage battery is an event of the not far distant future. Inquiries are being made from many quarters concerning the cost of initial installation of vehicle batteries. This means but a short forerunner in time when the changeover of a complete fleet of gas engines to storage battery operation will take place. On another page of this issue A. Emory Wishon, general manager of the San Joaquin Light & Power Corporation, has forcefully set forth a plan of how interchangeable storage battery units may be set up. Briefly, his plan is that the power companies might well purchase large quantities of standard interchangeable storage battery equipment at cost price plus small profit to manufacturer, operate these interchangeable units insofar as the power system is concerned at off peak hours, and make possible uses of electrical power not now developed to any considerable degree. There is much that may be said in favor of this plan. The Prestolite system of interchangeable units for gas cars has long since become an outstanding success, and we believe that the problem of storage battery equipment in interchangeable units should receive careful consideration. The vast interconnected transmission lines of the West are available for service, and the hitherto unexploited field of transportation by electric energy awaits development.

Improving Sales Through Better Salesmanship

ONE of the greatest handicaps which the electrical retail merchant today must overcome in his endeavor to maintain his business as the principal retail outlet for electrical goods is the fact that as a rule the quality of salesmanship in retail stores, other than electrical, is on a higher plane than is the salesmanship in the store of the electrical merchant.

In this, as in other things, the electrical industry can well afford to follow the example of merchants in other lines where we find the proprietor or the manager of the store talking to the sales force

about the goods, thereby educating them as to points in the goods that will appeal to the people who visit the store. The proper methods of approaching the customers, of handling their inquiries, of wrapping their packages and of returning their change are all covered in the educational work that is done with the sales force in the live successful retail store.

In the electrical industry we must also do these things if the retail electrical merchant is to dominate the retail distribution of electrical goods. The proprietors who attend the Association meetings must make it a point to carry back to their sales people the enthusiasm and knowledge there gained. They must encourage their sales people to read manufacturers' publications and trade journals with the idea that they will secure selling helps, and particularly information regarding the product which they are selling. It must be remembered that enthusiasm is one of the great assets of the successful salesman. There is nothing so important in creating sound enthusiasm as a thorough knowledge of the goods with the resultant confidence of the salesman in being able to present their qualities and usefulnesses. Therefore, Mr. Electrical Merchant, teach your sales people the essentials of salesmanship and include, in a large measure, information regarding the goods which you are selling.

Selling the Convenience Outlet Through the House Builder

CAMPAIGN movements of the West have done splendidly in their efforts to draw all branches of the industry together into a harmonious whole. Better merchandising problems have been tackled and solved. Advertising on a page basis with the cooperation of central stations and contractor-dealers has been forwarded. The convenience outlet and the electrical home campaigns have done much in spreading the electrical idea. The selling of power company securities and their purchase by members of the electrical industry has done wonders. And the national aspects through which national attention has been called to these outstanding accomplishments in the West, are not to be overlooked in the good will that has been directed toward the West from the East.

We ask ourselves, then, "What of the future?" Immediately ahead in the future must be the selling of the electrical idea completely to the public. This may be accomplished through the public school, through public addresses, through an appeal to industry as a whole. But above all in practical dollar and cent return, the getting of the home builder to work in the installation of more electrical convenience outlets is perhaps the best and most practical way of reaching every home with the electrical appeal. Already leaders of the industry in the West are quite awake to this possibility, and we find in growing communities such as Los Angeles that the thousands of Read-cut houses that are being erected will in the future have the electrical convenience idea introduced in them, and the models from which these houses are built have in certain outstanding in-

stances been re-designed to carry the electrical idea. In this case, the builder himself was sold to the idea and needless to say all future efforts in the building of Rendi-cut homes will be made with the electrical idea in view. This is only one forceful instance of what may be accomplished. The thousands of homes that are being built in the West can be made to carry this electrical message only by direct contact with the home builder himself. Here, then, is the big opportunity of the future. Get the home builder to work!

Open House at City Power Stations

THE great hydroelectric program of the West has called for some unusual settings on the opening day of each new power plant in recent months. Special trains have been run into the mountains and fleets of automobiles have been engaged to convey distinguished guests to the opening ceremonies, with the result that city editors have written editorials, country preachers have preached sermons on the little snowflake and its subsequent uses for man in the development of power. Too little attention, however, has been given to the nearby things in modern hydroelectric development. In the great metropolitan districts of the West are steam generating stations, substations for hydroelectric transmission, and other interesting equipment that should be opened more hospitably to the citizens and to the school children and students among the younger generation. More than one college man, for instance, recalls the first impression he got of the usefulness and efficiency of the modern hydroelectric system from the visit to the little power plant made in his young and impressionable days under the guidance of his professor. There is still too much mysticism about steam electric and hydroelectric generation. Here, then, is an opportunity, right at home, inexpensive, and accessible to thousands upon thousands of people. Why not try an open house day in local institutions of this nature?

Scientific Advance of Telephony in the West

SOME one has said that the vacuum tube is but a glorified lamp. Be this as it may, the vacuum tube has indeed become the practical method by which we control the path of electrons in order to assist in the transmission of human intelligence from one point of the earth's surface to the other, either by the well known telephone carrier wire or by radio. It is wonderful what is being accomplished in the West under this improved invention. In the period from 1910 to 1920 we find that the states of Washington, California, Oregon and a small portion of Nevada and Idaho grew from 4.2 millions to 5.6 millions of people, or an average growth of about 33%. The number of telephone calls, however, in this period of time in this same district, grew from 11 million to 39 million or three and a half times, representing a growth of about 350%. It is readily seen that the old method of transmitting

telephone messages by repeating by means of levers could never have handled this rapidly increasing load. As a consequence, it may be said that the substitution of the electron method whereby repetition is accomplished by assistance of the vacuum tube without distortion of the wave length and with a delicacy of energy emission to the point of about .01 of a watt, is what has made possible four or five conversations over the same wire at the same time without interference. It is difficult for the public to grasp this wonderful new advance of intelligence transmission, but to one who looks carefully and deeply into the technical features involved, the achievement ranks among the most inspiring of what may be practically accomplished under the highest type of research. It is possible to transfer intelligence by means of the human voice from Avalon, Catalina Island, by radio to San Pedro, thence by wire to San Francisco, thence to Philadelphia and on out to sea on the Atlantic Coast by radio, finally to be received by telephone aboard ship—one of the new wonders now being accomplished in the West. Without adequate communication communities will not thrive. The West is in full accord with this truism and everything possible is being done by those responsible to see that the West is in the van in the matter of intercommunication between its growing metropolitan centers. In this matter the Pacific Telephone & Telegraph Company is to be congratulated.

Catching Them Young To Promote Future Sales

FEW ENGINEERS graduate from college without having become sold for life on certain types of drawing instruments used in the drawing courses of their undergraduate years. Manufacturers of drawing instruments have long since recognized this characteristic, namely that we are all creatures of habit, and as a consequence are accustomed to place in the student's hands drawing instruments at greatly reduced prices. And the policy pays.

Now comes the suggestion that the electrical appliance utilized in the home be placed in the school, college and university. Here is a wonderful opportunity to put over the electrical idea. True, it may be that some months or even years may elapse before the industry as a whole will cash in on this educational program, but the idea is one that is certain of returns and should be given not only careful consideration, but every possible bit of endorsement and weight necessary to make the idea move into action.

Along with these installations there should be capable women to give instruction, or at least to assist university instructors in the practical lines of demonstration. What the younger generation is interested in gets into the home and to the older folk more quickly than one would think. Indeed, one does not always have to wait until the younger generation grow to be old people before an idea has travelled far beyond the generation in which it originated.

Western Comment on Current Events

Editorial Notes and Readers' Views on the Outstanding Aspects of Financing, Trade Promotion, Legislative and Associated Topics that have a Special Bearing on Western Business

Re-Export Zones Affect Western Ports Proposed Congressional Tariff Measure Provides For Free Trade Areas at Pacific Ports. Single Port Provision Criticised

Western shipping interest at the present time centers upon the free port clause of the trade zone bill introduced into the Senate by Senator Jones of Washington and discussed elsewhere in this issue. Local foreign trade clubs and other bodies interested in trans-Pacific commerce have passed resolutions in its favor.

The provision that only one such free trade zone may be established on a single harbor unless more than one state is involved, however, is one which is detrimental to western interests and should be stricken out. The Puget Sound district, San Francisco harbor and other western points would thus be allowed only one such free zone, whereas New York and possibly Chesapeake Bay on the Atlantic could take advantage of two.

The establishment of such zones should be based upon the needs of commerce and should not be arbitrarily placed by state boundaries. On the other hand, the bill is the first step which has been taken toward the establishment of such free ports upon the Pacific Coast and with the exception of the minor objection noted, should receive the support of all westerners interested in the advancement of Pacific trade.

Engineers Report on Deschutes River Board of Government Engineers Decides Relative Importance of Power and Irrigation Rights On Oregon Stream

Evolving the most effective plan for utilizing to a maximum both power and irrigation possibilities of the Deschutes River in Oregon, has been the purpose of a board of government engineers which recently submitted its report to the Federal Power Commission. The work of the board is of interest in this particular case and important as a precedent from which deductions may be made as to the policy of the Federal Power Commission. There are three western rivers on which power permits are pending and which are capable of being used for both power and irrigation—the Deschutes, the Columbia and the Colorado. The same board which reported on the Deschutes, together with the state engineers of Washington, Idaho and Montana has been named by the Power Commission as a board

to make a comprehensive study of the Columbia River from Flathead Lake down. No similar arrangement has been announced, however, affecting the Colorado River. The Deschutes River board consists of D. C. Henny, consulting engineer, U. S. R. S., Col. J. B. Cavanaugh, engineer corps, U. S. A., and F. F. Henshaw, district engineer, U. S. G. S., all stationed at Portland, Oregon.

In its findings on the Deschutes River this board divides the stream into three sections; (1) that above Benham Falls, (2) that between Benham Falls and the mouth of Crooked River, and (3) that below the mouth of Crooked River. The board found that with full irrigation use in the upper and middle sections, 15 power sites could be developed in the lower section with an aggregate capacity of 471,600 hp. which might be increased by 38,500 hp. through storage on Crooked River. Nine of these sites, aggregating 362,300 hp. without storage could be developed, it was estimated, at less than \$140 per hp. delivered at the mouth of the river. The board also found that an additional 156,000 hp. which could be developed in the middle section of the river, would be of far less value in a country of such abundant water power than the use of this water for irrigating the 110,000 to 140,000 acres of land now under cultivation there.

Los Angeles Traffic Problems Studied Arcading System Suggested as Solution for Traffic Problems on Narrow Streets of Congested Business District

Los Angeles has for some time held an unenviable record from the standpoint of street accidents, a condition due to the narrow thoroughfares of its business district, combined with excessive motor traffic. In an effort to solve this difficulty by widening the streets in effect, without the tremendous expenditure involved in such an undertaking, City Engineer Osborne of that city has proposed that Los Angeles use the Temple Block to test the sidewalk arcade system. Under this plan, the curbs will be moved back to the building line and the sidewalks find shelter in long colonnades under the porch-like protection of the buildings themselves. This would double the advertising space available to the store owners and the romance of Old World streets and the charm of early mission architecture might find ready expression in such a plan. Certain it is, that unless Los Angeles is prepared to see its busi-

ness district shifted to other and more commodious streets, with all the waste and duplicated outlay which this involves, some remedy should be seriously considered at this time and the arcading system offers attractive possibilities.

University Aids in Industrial Survey

Unique Method of Conducting San Francisco Survey Made Possible Through Cooperation by Students of State University

A city wide survey of San Francisco's industries for the purpose of obtaining complete information regarding manufacturing activity upon which the community can base an intelligent industrial promotion campaign, is being made by 150 students of the economics classes of the University of California under the direction of the San Francisco Chamber of Commerce.

The survey will cover the consumption of all raw materials, the employment of labor, payroll figures for groups and for the whole manufacturing interest, the volume of business, and definite facts regarding the difficulties which the management in each industrial group seeks to overcome. It is expected that it will reveal many important business facts and will afford the basis for later intensive study of those lines of activity which are either inadequate or wholly unrepresented in San Francisco.

For the purposes of this survey the city has been districted and a student assigned to each district who will ascertain the names of all manufacturing firms. These will then be addressed by a letter from the Chamber of Commerce, followed by a personal call from a student who has been reassigned to some one industry throughout the city. It is expected that the work of obtaining and compiling the information will be complete by December 15th.

The students will be given college credit for their work and in addition have the advantage of the personal contact with business men and organizations as well as the practical experience in field research. In return the San Francisco Chamber of Commerce obtains the benefit of a survey which would have involved considerable expense to carry out and might not have been possible under other circumstances. The arrangement suggests the possibility of other beneficial cooperation between western universities and western industry.

Distribution of Securities Explained

Straightforward Stand for Careful Investigation and Truthful Advertising in the Distribution of Securities Taken by Western Bond House

The responsibility of a bond house for the protection of the public in the distribution of securities and the steps which are taken to ascertain the soundness of the issues they sponsor, was explained by Cyrus Pierce of Cyrus Pierce and Company in an address recently before the Rotary Club of Fresno, California. Mr. Pierce said in part:

In the case of any corporation bond, before the bond house decides to purchase the bonds offered and to offer them to its customers with the moral responsibility of the house behind them, there will be employed chartered accountants, engineers, appraisers and attorneys. The true bond house regards its duty to its customers as paramount to every other consideration and holds its moral responsibility very high. Its salesmen are drilled that there are three rules that must be adhered to with the utmost rigidity; first, never under any circumstances misrepresent a security—tell the absolute truth about it, first, last and all the time; second, never allow a customer to purchase too large a proportion of any one issue; and, third, be sure that the particular investment is suited to the particular needs of the customer.

This statement by a prominent bond house is significant of the forward stand being taken by western financial interests who are handling the distribution of utility securities. This attitude is welcomed by all concerned with the welfare of that industry on this coast. It has happened in the past that a less high-minded attitude has led those selling utility securities to exaggerate on occasion concerning certain aspects of the companies represented. Such words of unmerited praise which cannot be substantiated upon later investigation are the most doubtful of benefits. The public service industry of the West has long appreciated the necessity for scrupulous honesty in every statement given out to the public.

Mr. Pierce in his connection with N. W. Halsey & Co. and with his present firm has played an important part in the distribution of utility securities, having handled \$20,000,000 of the twenty-two million San Joaquin Light & Power Corporation bond issues as well as securities of many other of the western power systems.

Protest Against Tax Free Securities

Pacific Coast Gas Association Takes Action Urging Withdrawal of Tax Exemption Privileges From State and Local Securities

The injustice of allowing federal, state and local securities tax exemption privileges in competition with securities offered by public utilities and other industries was protested by the Pacific Coast Gas Association at their recent meeting held at Del Monte. The resolution as passed urged national action which would lead to corrective legislation.

The original purpose of such exemption was, of course, to obviate the supporting of one branch of the government at the expense of another, but in practice, it operates merely to permit governmental securities to be sold at lower rates of interest return. No part of the income derived from tax free securities is contributed toward the support of our public institutions or in payment of our national debt. As has already been pointed out in these columns, the question of governmental vs. private ownership of enterprise should be fought out on lines of their relative service to the people—and not as a left-handed method of revising the national or local tax system. Both types of enterprise should be placed on an even footing so that the public may understand that what they do not pay for in one way under government ownership, they pay for in another.

Letters to the Editor

Possibilities of the Electric Truck from the Power Company Standpoint

To the Editor:

Sir: Our experience with the electrical truck proves it to be slow, limited in possible distances, but of low maintenance cost, simple in operation, easy to start and stop, and having great possibilities for service work with the power companies if certain conditions are overcome. However my thought of the electrical vehicle possibilities never confined itself to the use of the vehicle by the central stations alone. At one time I could have sold twenty ice delivery trucks to one company if I could have secured the proper proposition.

If the electric truck is to come into its own within a reasonable time, in my opinion several objectionable features must be overcome, and with proper understanding and co-operation I believe they can be.

First: An electrical truck must not be limited in distances.

Second: In considering the purchase of a truck, even with a lower operating cost, the sale price must be practically comparable to the gas cars.

Third: At the present time the chassis of the truck, without battery, is approximately the price of a gas car. The question in my mind therefore resolves itself into the subject of battery cost.

Electrical vehicle batteries, like any other commodity, can be produced at a lower cost on a quantity basis than they can as manufactured at the present time in very limited numbers. If the battery companies can be shown that at one-third the profit they are now making on the battery they could sell five times the number of batteries they would readily agree, I believe, that an increased production at a lower price would be to their net profit.

In my opinion the questions of first cost to the consumer and limited distances can be overcome in the following manner:

Batteries can be manufactured, we will say, in units of 10 hp. with a 50-mile radius of use, and these units could be so constructed that they could be added to or taken from the truck in a couple of minutes, and then if the central stations could arrange to handle the charging and interchange of these units the limited distances of electrical trucking would be overcome.

Next, if the central station could arrange at its different sub-stations, or with different garages in each city, for charging batteries, and sell storage current at so much per kilowatt hour including the use of the battery, it would put storage energy on the same basis as gasoline to the consumer.

The power company's dream is 100% load factor daily and yearly, but it never comes true. There is always a certain part of the day when capacity is available, and, under normal conditions, when hydroelectric power is available—electric energy during that time could be sold at a wide margin of profit to the power company.

I am of the opinion that if the battery companies could see the possibilities of interchanging batteries similar to the way the old Prest-o-lite tanks were interchanged, and would sell to the central stations or dealers those batteries at factory cost plus a small margin of profit to begin with, and allow the power companies sufficient time on each battery

to amortize that battery through the sale of current consumed by it, the trucking business could be developed in the next year or two to a point where it will not develop under the present methods in the next ten years. Where charging of the batteries could be done at a time of the day or year when the cost of energy was low the power company could as a good business proposition, afford to allow the full price of the current used in the batteries to go on the payment for the battery to the battery manufacturer. After the battery had been paid for it would then become the property of the power company, and that same current that is now idle could then be sold to the consumer for storage power at a net income to the power company.

Several years ago I made this line of argument to several of the battery companies and then found that it had been tried in the East with only fair success, but to me that does not prove the theory wrong or the scheme impossible.

If I were putting this scheme into effect on this system I would begin by trying to sell delivery trucks limited to in town work, and would set up one charging station to start the proposition, and would work toward the time when a continuous string of sub-stations, power company offices, garages, etc., from one end of the state to the other would be equipped for the charging and interchanging of batteries. It would be handled on much the same basis as the different railroads interchange cars today. This would ultimately allow electrical trucking from one end of the State of California to the other, with the right of interchange of batteries at all points.

While I have done nothing on this subject for the last year or so, I do not think it at all impossible at this time to convince some one battery company of the possibility of building an interchange battery, thereby increasing the flexibility of electrical trucking, and increasing their sales by selling this battery on time to the power companies that the power companies may earn the price of the battery through the current they sell through the battery.

If the battery companies will give terms to the central stations that will allow the central stations to handle the batteries on an interchange basis which will allow the consumer when considering the purchase of an electrical truck to be concerned only with the cost of the chassis, then you will see a real advance in the electrical vehicle game, and the sale of storage batteries for electrical vehicle purposes will be ten to one to what it is now.

I think the subject is well worth careful consideration.

Yours very truly

A. EMORY WISHON, General Manager

San Joaquin Light and Power Corporation
Fresno, California

Danger in Unrestrained Enthusiasm is the Warning of Western Jobber

To the Editor:

Sir: We are preaching to the retailer the necessity of better business methods, better locations, dressed up stores, and comprehensive window displays, which are all right and proper if there is a balance wheel somewhere. We should warn and advise the dealer, (a) of the danger of going too far in this expense, (b) of too many such stores in a given locality, (c) that as yet there is a limit to the immediate volume of business in sight, and (d) that high overheads are hard to reduce after you are once committed to them.

It should be the duty of managers and field men in this development movement to not only work up harmony and enthusiasm among the different branches of the industry, but to temper that enthusiasm. Too much enthusiasm

will blind us, too little will put us in the morgue. I never believed in revival services, and I sincerely trust that all our Pacific Coast plans will steer clear of the "Hip-hurrah, come in, think about it afterward" stuff.

We have a district in the Northwest that during the past several feverish years refused to be stampeded, but went along in the even tenor of its way. They and their business were regarded as dead. Today their volume is a little better than it was then, and is the brightest district in the Northwest. They pay their bills, have in their hip-pockets the profits they have made, and there have been no failures. I wish all the Northwest were in as good condition.

Finally, I would add that it is better to be tempered with a little pessimism than to be a blank fool optimist.

Results of our work in the Northwest will be slow, and that is as it should be, as no "cure-all" has yet been found, and we should not promise any. Our companies are firmly behind these various educational movements, but we refuse to get excited. We are playing for the long-drawn-out results.

FLOYD N. AVERILL, General Manager
Fobes Supply Company,
Portland, Oregon.

New Rule of the Road Necessitates Many Changes in Track and Equipment

To the Editor:

Sir: In accordance with the Highway Amendment, Act 1920, passed by the British Columbia Provincial Legislature, the rule of the road was changed from left to right hand operation, to become effective in the Western portion of the Province on December 31st, 1921. (The Eastern portion of the Province was changed over on July 1st, 1920).

This change involves the British Columbia Electric Railway Company in a \$1,000,000 expenditure.

In order that the magnitude of the work involved in making this change-over may be understood I briefly give below particulars of what has to be performed and how we propose to do it.

Track: The following work will have to be performed in order to permit of cars and trains to operate right hand with the same efficiency, safety and convenience as they are at present being operated.

1. Take up and lay with new material 44 permanent and 12 temporary cross-overs.
2. Take up and lay with new material 7 permanent and 1 temporary Y layouts.
3. Change electric switches to adjoining tracks at 19 different points.
4. Change position of 8 derrails.
5. Change spring switches.
6. Change elevation of certain portions of Interurban tracks to permit of safe operation.
7. Change location of Stations, Shelters, and Platforms at 13 points on double tracked Interurban lines.

The new track material and special work necessary to carry out the above is now on order but installation cannot be commenced until after the first of the year.

The estimated cost of track alterations is \$416,902.67.

Overhead: The overhead changes in connection with this problem are by far the lightest item, and are estimated to cost \$17,722.00. Like the track changes, very little under this heading can be accomplished until after the change-over becomes effective.

Rolling Stock: Rolling stock changes constitute the major work and expense involved in this change-over and I know of no precedent by which we might be guided in carrying out the same. There are 269 units to be rebuilt, comprising 20 different types of cars, each type requiring special

alterations suitable only to that particular class of car. Temporary alterations are being carried out with the latest possible inconvenience to the travelling public and work is proceeding along the following lines:

Eight to ten cars at a time of a certain type are being brought into our Prior Street Shops, located in Vancouver, where temporary alterations to front and rear vestibule are made as well as installation of temporary steps on right hand side of cars. The right hand side openings are then boarded up and cars put back in service. When the change-over is actually about to take place the service on all lines will be considerably reduced for a period of from one to four days during which time the cars so released will be made suitable for right hand use by removing the boards from the right hand side openings, above referred to, and tying up securely the gates or doors, of which all our cars are equipped, on the left hand side. With this completed cars will then be ready for service. When all units have been so changed it will be necessary systematically again to put all the cars through the shops, two or three at a time, when permanent alterations will be made, such as installation of steps, and gates and doors, (to conform with Government regulations), installation of operating mechanism, as well as many other details.

I estimate it will take from 18 months to two years to put all the units through the shops and permanently equip them for right hand operation.

\$498,773.00 is the estimated cost of changing over our rolling stock.

Conclusion: The above expenditures summarized amount to \$933,397.67 not including indirect losses in revenue which the Company is bound to suffer from one cause or another for months following the change becoming effective. Further, it does not take care of increased accident costs which will undoubtedly be high.

Of the total figure quoted above the Provincial Government has agreed to contribute \$350,000.00

W. G. MURRIN, Assistant General Manager.
British Columbia Electric Railway Company, Ltd.,
Vancouver, B. C.

Side Tracking the Danger of Price Cutting Through Creative Cooperation

To the Editor:

Sir: A problem of vital interest to the jobber and dealer today, is the return of pre-war conditions. Prices must soon stabilize and then will come stronger competition which is liable to cause an era of price cutting. The contractor should realize that the larger percentage of consumers are willing to pay a legitimate price for his installation and a contractor who once puts in his bid should know it is right and then stand by it. One of the greatest faults with some today is that they have the wrong impression that they must meet their competitor's figure. The most important factor should be to build up the customer's confidence by giving some service equal to the remuneration received, which will stabilize a business above competition. Meeting a competitor's figure is a sign post on the road to ruin.

There is a lack of advertising of electrical appliances in San Francisco and vicinity as compared with the southern part of the state and if we do not look to our laurels, electrical goods will soon be retailed here almost exclusively by the hardware and department stores. Some of the Los Angeles dealers can inform you how they, some three or four years ago, turned this trade back into its legitimate channels and are today selling practically 100% of the appliances used. The use of such appliances today in northern California is much less than it should be and an advertising campaign should bring gratifying results if properly handled. I feel quite sure that the power companies would be unanimous in their support of such a movement.

The electrical merchant cannot today make a great success by handling electrical appliances on a 30% margin. The answer lies in creative cooperation.

Wholesale Electric Company,
San Francisco

A. R. FIERCE,
Proprietor.

Builders of the West

WHEN a side-wheeler steamboat poked her nose on a sandbar in the lee of Point Firmin late in 1875 after a tiresome journey from San Francisco, Fred L. Baker, then a boy just short of ten years of age, was one of the passengers. With his parents, he had completed the long trip from Lansing, Michigan, to the land which was later vividly to bear the mark of his achievements. Today as president of the Los Angeles Steamship Company, he rides out of Los Angeles harbor on his own luxurious steamers.

Varied has been his career in the shipping world. In 1917 he realized the importance of the shipping problem to the nation and with a group of associates prepared to build ships in a harbor that did not exist and in a shipyard that was all on paper. The Baker Iron Works, which he also heads, began fabricating the steel for the first vessel while an army of workers erected the plant. By the time the eighth ship left the ways even the 4,000 horsepower engines were made locally. The accomplishment might have been worthy of commendation even in an old established steel center, but to completely transform a big machine shop and to build a permanent shipyard covering seventy acres in a few months, smacks of Aladdin and his wonderful lamp. A few days ago, as president of the Los Angeles Shipbuilding and Dry Dock Company, Mr. Baker watched his wife christen the thirty-fifth hull launched for the United States Shipping Board.

As boys, Fred and his brother, Milo, worked as apprentices in the old City Foundry and Machine Shop, established by their father and an associate in 1877. Later the name was changed to the Baker Iron Works, known throughout the West for its advancement in mechanical lines. Much of the initiative for entering new fields has its beginning at one of the box lunches which are held at the plants and which are often attended by 4000 men. They result in an atmosphere of striving for still greater things, verifying Mr. Baker's conviction in placing



FRED L. BAKER

Shipbuilder and owner of a fleet of swift seagoing traders, who envisages the Pacific Coast as the future center of world trade with Los Angeles as the ocean gateway for the vast backcountry of the great Southwest.

furnishes the city with water. No single achievement of his life could better show his capacity for organization and his business principle of rendering service, than the Automobile Club of Southern California which he directed as president from its conception until last spring when its rolls numbered 60,000 members. Making a success of the auto club has been to him all the recreation and diversion that other men find on a country golf club links.

His present consuming ambition is directed toward the upbuilding of the shipping industry on the Pacific Coast, and Los Angeles Harbor in particular. He feels that the millions of dollars that he and his associates are investing in shipbuilding and in steamship lines will play an important part in carrying the commerce of the world to and from the Pacific coast.

So to Fred L. Baker, for his keen appreciation of the "men on the job," for his untiring effort for a bigger industrial west and his ambition to see the west of his dreams a reality in the near future, this issue of the Journal of Electricity and Western Industry is affectionately dedicated.

responsibility on any man who proves that he can combine loyalty and efficient service in his work.

This idea of cooperation is not new in the western industrial world but it has been worked out to such a degree of perfection by Mr. Baker in his various plants, that the scheme has been taken as a model in many other industries. There is no set time for these box-lunch meetings but they are called when problems arise which demand the utmost cooperation between men and executives. The progress which has been made in some of the plants both in efficiency and output has been laid directly at the door of these informal meetings.

Nor has all of Mr. Baker's effort been devoted to business alone. From 1905 to 1908 he served as a member of the Board of Public Service Commissioners of Los Angeles, aiding in the securing of the 230-mile aqueduct system which

Building a World's Record Transmission Line in the West

Some of the Problems of Construction Which Have Been Overcome by Western Engineers in Building the Record 165,000-Volt, 240-Mile Transmission Line from the Caribou Plant to San Francisco

BY ROBERT SIBLEY
Editor Journal of Electricity and Western Industry

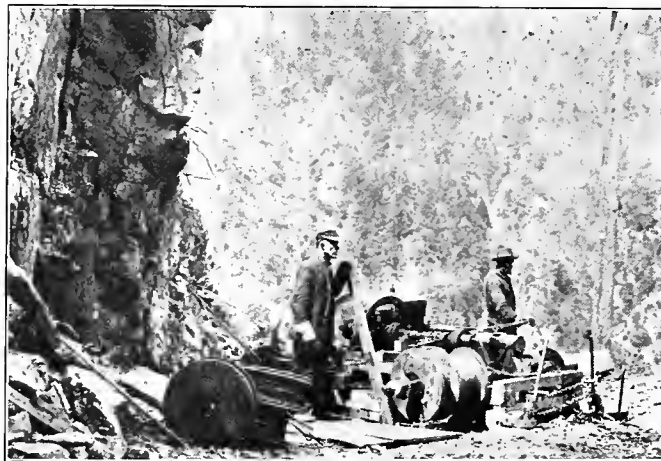


No. 1 shows the lower six insulators of a string of ten insulators together with the static shield and clamp in position.

It was thirty years ago that the West was first able to boast of the longest transmission system in the world. The record of that day stood at 22½ miles transmission with a voltage of 10,000. Today even the splendid new record 165,000-volt Caribou - San Francisco line of the Great Western Power Company will within the next year be outdone by an even greater feat of constructive imagination in the installation of a 220,000-volt line from the Pit

River country in Northern California to San Francisco, a distance of 240 miles. Experiments are already carrying the subject even to greater heights and we hear of the experimental line now in operation by the Southern California Edison Company at 235,000 volts over a distance of seven miles, and of the recent laboratory experiment in the East, playing with voltages of one million under commercial operating frequencies.

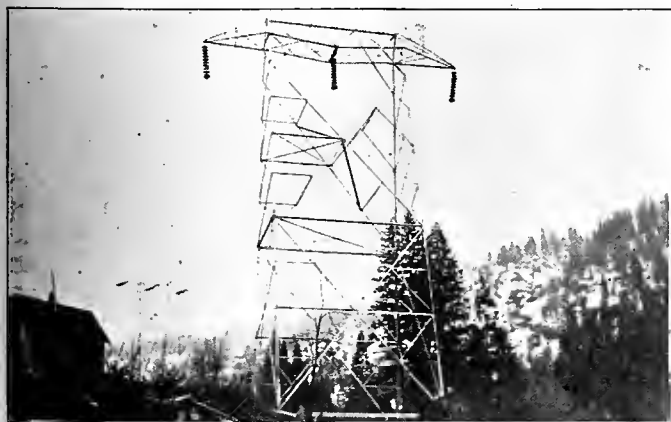
With increasing voltages, the problem of insulation has become more and more important and for a time, it was thought that the limit of possibilities was reached with 150,000 volts. Investigations carried on by Prof. Harris J. Ryan of Stanford University have shown, however, that it is possible to direct and modulate the critical strains set up in the



No. 3 is the type of engine used for pulling the wire. A bull line (¾ in. diameter plowshare steel rope of 600-ft. lengths with an eye splice each end) was used for pulling the wire through the towers. The line was made in 600-ft. lengths to make it lighter for handling and getting into difficult places. The lines were stretched out for a length of the wire (4,000 ft.) and connected with KB links. A 5-hp. gas engine, with a friction clutch and worm gear for a drive with 6-in. and 14-in. drum, was used to haul in the bull line and pull three conductors into place. As the three conductors came to the towers they were disconnected and passed through their correct position. In general practice it was found that the engine would pull about 2,500 lb. on the wire. The engine was located as near as possible to the transmission line, using snatch blocks to support the bull line where necessary between the last tower and the engine, and was used where the transmission line was near the railroad track or trails over which it could be moved. It was moved by its own power in some cases, by running a bull line out through a snatch block and in the other cases by using four horses to drag it, or again by push car when close to the railroad track.

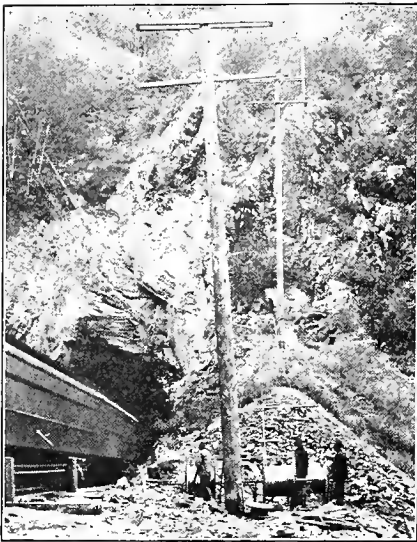
atmosphere surrounding a conductor so as to distribute the load over a string of several insulators. The invention of a shield such as that shown in Fig. 1, and the use of ten, twelve or thirteen insulating discs in a row (Fig. 2) makes possible the new record 165,000-volt Great Western line whose construction the accompanying views portray.

It is difficult to visualize the constructive imagination and daring necessary to build such a line even with all the research data of the scientific world at the command of the engineer. Fig. 3 shows the ruggedness of the country through which the line must pass together with the mechanical devices necessary in drawing the snake-like strands of aluminum over the mountains, while Fig. 4 pictures a little offing alongside a transcontinental railroad where the giant reels are placed while the cables are drawn over the mountain peaks and across deep gorges by the engine shown in Fig. 3. Often through this rough country the wires must be pulled up steep slopes, at times seven hundred feet above the railroad right of way as shown in Fig. 5. Along with the stringing of the wires must go the installation of sectionalizing switches for the perfection of control in the operation of the transmission line.



No. 2 is a portion of the completed line with a standard tower in the foreground and a dead end tower shown in the distance. Ten insulators per string were used on straight line construction and two strings of twelve each used at dead ends. Where V or double construction was employed, eleven insulators per string were used. The latter construction was employed over highways and where slight angles in the line were encountered.

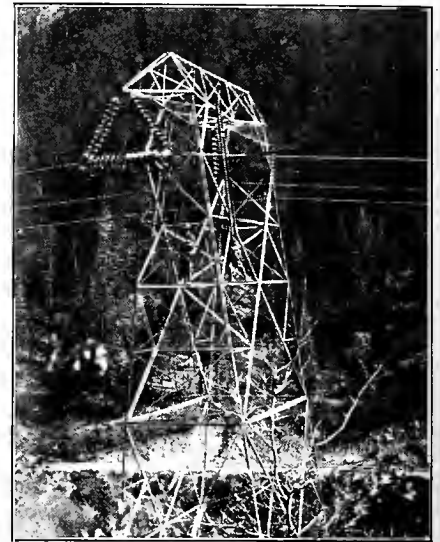
EDITOR'S NOTE.—For the remarkable photographs shown in this article we are indebted to Walter Hays, superintendent of the construction gang of the Great Western Power Company, who took them as the work progressed.



No. 4. The reels were located as near as possible to the tower line, in some cases along the railroad track below. The wires were carried through snatch blocks up the mountain to keep them from rubbing on the ground and being cut by the rocks.



No. 5 shows the ruggedness of the country and heights to which some of the wires had to be pulled. In this picture the reels were located along the railroad track and pulled past the highest tower, which is located on Eagle Point, 700 ft. above the railroad right of way.



No. 6 is one leg of sectionalizing switch installed complete, showing the ladders which were used in its construction. These switches were installed by two linemen and two groundmen and later served in maintaining perfect control in the operation of a transmission line nearly 200 miles in length.

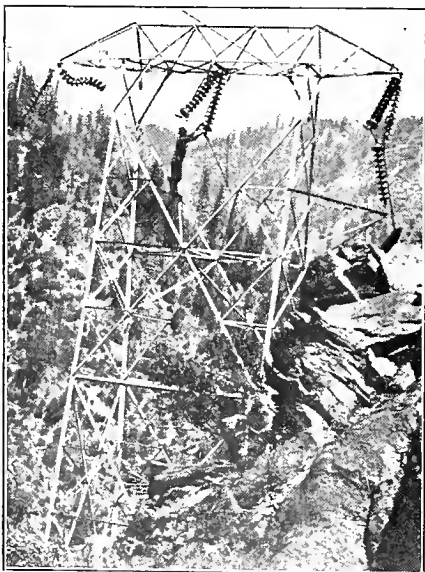
The conveying from place to place of the portable ladders used by the workmen in erecting the steel towers is a problem which calls forth the utmost ingenuity of the construction engineers, as pictured in Fig. 6. Intricate tricks must be performed in making a V-construction, or double installation of insulators for properly relieving the enormous weight of wire while the workman is making the preliminary attachments. This feat is illustrated in Fig. 7. The making of a dead end for abrupt turns requires careful handling of the wire while attaching it to the insulators. (Figs. 8, 9 and 10.)

When the immense reels have exhausted their length of wire, splicing of the cables is necessary in such a fashion that the electrical conductivity may be preserved and the proper mechanical strength

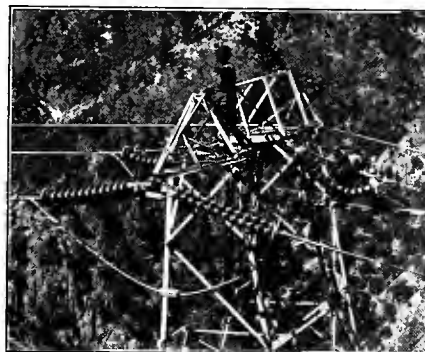
retained. This interesting mechanical operation is shown in Figs. 11 and 12. Often after the construction of the line is completed, accidents may occur which necessitate a careful examination of miles of cable. The daring feat of the workmen in riding along the wire is depicted in Fig. 13.

In the journey down from the mountain gorges to the metropolitan centers, great expanses of water call for spans of wire across distances never before equalled. Proper balancing of the tension on the insulators in such spans is a delicate procedure. Fig. 14 depicts the method of obtaining this balance for the wires over Carquinez Straits, the second longest span in the world.

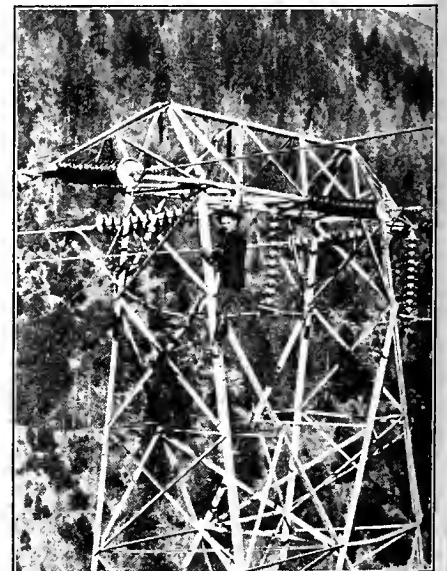
Inductive interference has been one of the problems which has been overcome in the construction



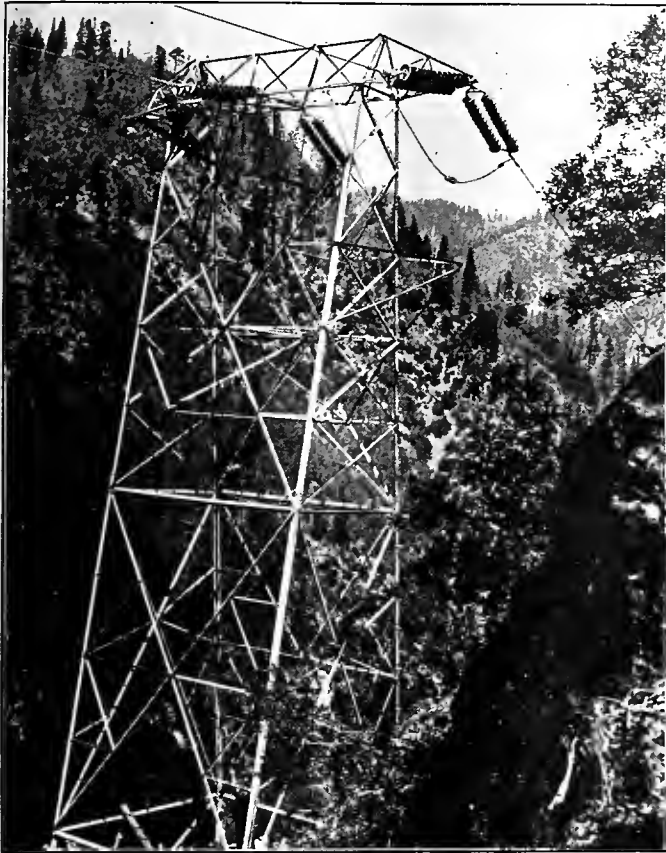
No. 7 is method of clamping a V or double construction of insulators. The workman stands on the tower and takes the weight off the insulators in which the conductor is hanging by use of a set of three-sheave 4-in. blocks and places the clamps in the proper location, hooking them to the insulators.



No. 8. In making dead ends, it was found better to string wire through, so that the wire stringing could go ahead, while a small crew followed to finish the dead ends. A lineman worked on either side of the tower on a ladder, fastening the yoke in its correct position by measuring out the length of a string of insulators. A turnbuckle was used to take enough slack out of the wire to allow the placing of the insulators between the yokes. One man could handle this by hanging first five units at one end, then seven at the other end, and hooking them together. The turnbuckle was then released and the jumper run between the two ends of the dead end. A plank is provided for the workmen to stand on. All this equipment is light so that it can be transported by hand. The man is here shown in the act of making the final connection of the string of insulators.



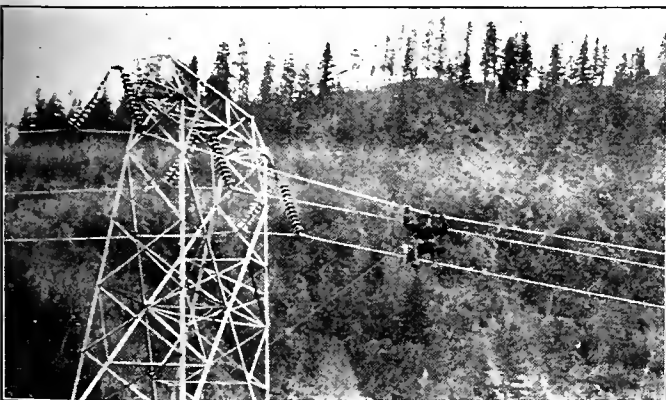
No. 9 is a full dead end and a half dead end. A half dead end or a single string of insulators for deadening was installed on short spans of 200 ft. or under. The vertical insulators shown in the picture were used on large angles to keep the jumpers directly under the point of suspension and give the maximum clearance.



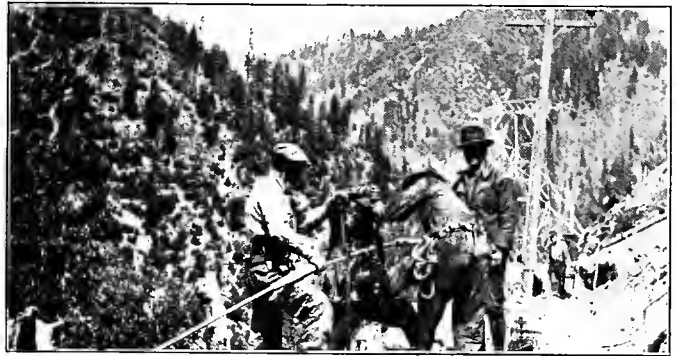
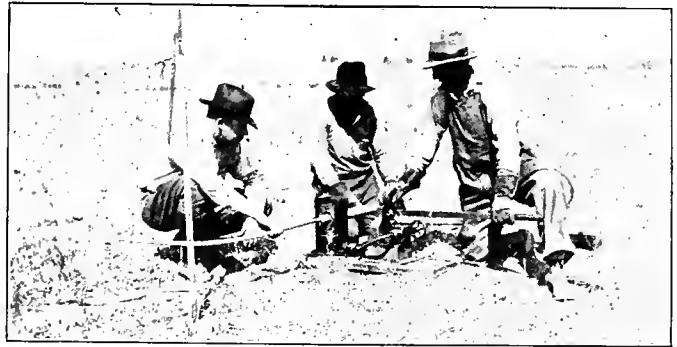
No. 10 shows the placing of the jumper between the two extreme ends of the dead end. On small angles a weight was placed on this jumper to keep the wind from blowing it too close to the tower, thus maintaining the minimum safe clearance. The picture also shows more clearly the type and manner of using the ladders.

of long distance transmission lines in the West. The frontispiece illustrates the method of transposition which has been worked out by the Pacific Coast Inductive Interference Committee, to overcome this.

When we look at these accomplishments of the present we ask ourselves, "And what of the future?" In the years to come we see the industrial west not disfigured by unsightly smokestacks, nor our clear skies murky with the smoke and grime so unpleasantly associated with modern industry. Instead we see great transmission lines covering the western empire, harnessing the seventy per cent of the nation's water power which lies west of the Rocky Mountains and transmitting this energy to all centers of population to run our industries and to nurture our farms into more productive wealth. We see



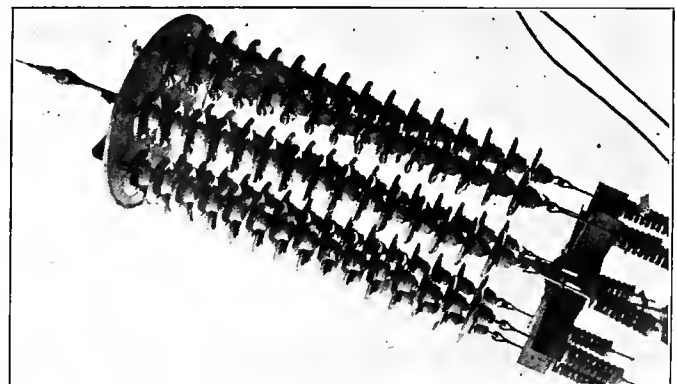
No. 13 shows the method of riding a cable with a carriage to examine a wire which had accidentally come in contact with a 44,000-volt line, near the line under construction.



No. 11 and No. 12. A splice is made by removing the aluminum strands from the steel core back $18\frac{1}{2}$ in. from the end of the wire. The core from each end of the wire is then placed in a McIntyre sleeve and a clamp placed on each end for twisting purposes. Between these two clamps a piece of split pipe is wired to keep the sleeve from buckling as it is twisted. No. 11 shows clamps and pipe in place preparatory to twisting the splice. Note that one end of the splice is placed in a pipe driven into the ground so that one workman can hold it while two others twist. After five complete turns, clamps and split pipe are removed and the aluminum sleeves brought together over the McIntyre and screwed tight with monkey wrenches. This sleeve is then placed in a hundred-ton-per-square-inch hydraulic press, as shown in No. 12 and its ends pressed until a perfect mechanical joint is formed.

ever increasing voltages making possible the development of cheaper power and its conveyance over longer distances, and we see out on the western shores of this continent, the last new West,—an empire born of constructive imagination in the scientific use of the great laws of electricity.

Indeed we see in the commercial utilization of the forty million horsepower of the West, placed at a conservative productive value of twenty-five dollars per horsepower per year, a golden dream far beyond the halcyon days of forty-nine, a commercial value of one billion dollars annually in the production of raw power that will bring to life industries with an annual value exceeding even this remarkable figure by a hundred fold.



No. 14 is a detail of deadending of wire at Carquinez Straits, the second longest span in the world. Springs were used to get equal strain on each string of insulators.



At the new plant of the Simons Brick Company two industrial trucks do all the work that 10 mules and 10 men would have been required to do, with less damage to the bricks and a saving of \$15,000 a year.

Special Electric Trucking Opportunities in Western Cities

Western Conditions of Climate and Power Supply Make Possible the Ready Reduction of Transportation Costs and the Solution of Congestion Problems Through the Use of Electric Delivery Trucks

BY CARL K. CHAPIN

STREET transportation problems have become an absorbing topic in most of our western cities. The municipalities are striving to devise ways and means to control the situation; the merchant sees his delivery expense increasing by leaps and bounds; and the public, whether afoot or riding, suffers inconvenience or expense as an innocent bystander. This congestion suggests some phases of the delivery problem which can easily be remedied.

Rapid city growth establishes new centers of

distribution and junctions in traffic where the streets, inadequate to carry the business, become scenes of traffic jams one after another all day long. The waste of time and fuel is appalling under such conditions. A few slow moving horse-drawn loads contribute more to these traffic jams than any other cause. What could be more uneconomical than hundreds of heavy-duty gasoline trucks with engines running, but trucks standing still, waiting for a jam to be broken. Fuel is going to waste and the vehicles are limited to a fraction of the mileage which



To negotiate the crowded streets without accident is always difficult but this is more dangerous with heavy loads like ice cream delivery. A new ice cream company finds electric trucks most satisfactory for its service and has ten vehicles on order at the present time.



With ten years to their credit and one renewal of Edison batteries who can guess the real life of these trucks? The Capitol Milling Company maintain and charge their own trucks and keep them like new. 100,000 miles and only out of service during painting time.

There seems to be no limitation to the future of the Pacific Coast electric vehicle business. The eastern factories will undoubtedly come west with assembly plants or western factories will be built to handle this territory.

Preparing to Face Your Bank with a Clean Balance Sheet

Some of the Questions Which the Business Man Should Ask Himself Before Going to His Bank for Financial Aid Are Outlined in the Second of Two Articles on the Principles of Financing by a Western Banker

BY F. R. KERMAN

New Business Department, Bank of Italy, San Francisco

THE business of "house cleaning" as a preparation for asking financial aid is so important, that it is logically to be expected that every enterprise gives it first consideration. Unfortunately this is not true. Quite frequently the management gives no thought to the subject until the time is already ripe to launch financing plans,—and then it is too late. Even more universal is the entire neglect of adequate preparation and the seeming ignorance on the part of many otherwise capable men, that the adjustment of interior conditions is in fact a major part of the whole undertaking.

Building a New Enterprise for the Future

Far-sighted men who launch an enterprise of any dimensions, always build for the future. They look ahead not to the next year, or to the year after that, but five years, ten years,—or perhaps a generation. They weave into their organization the basis for financing plans of a later day. They consider the character of those individuals who are to be identified with them, and the far reaching trade policies which are to be pursued. Great care is exercised in selecting a location for their plant, keeping always in mind the proximity to raw materials, suitable fuel, markets, labor supply, and transportation. Nothing of a questionable nature is permitted to shadow any of their dealings, and while it may be said that one eye is always kept on the balance sheet, certainly the other is glued to the Ten Commandments.

Wise promoters, in their organization process, always cultivate the friendly offices of a strong Bank. They want to follow the "straight and narrow path," but they feel better repaid for their efforts if a prominent financial institution is close enough to see and appreciate the exhibition. It is not out of place to say that many small industrial plants have succeeded in doing this,—largely because they scrupulously maintained comfortable bank balances during their formative period.

Financial Aid for a Going Concern

Now consider the case of a going concern. The time is approaching, the management feels, when new financing will have to be undertaken. It matters not whether the need be for additional capital, or temporary assistance—at present it is enough to know that the house must be put in order. What is to be done?

First of all, the keen thinking business manager will look about for a reason to which he may publicly assign the necessity for additional financing. It is a matter of record that most small companies have been especially successful in securing

added funds when they were able to announce that some well-known individual was to join the organization; that a new and desirable trade connection had been secured; that an improved process was being installed; or that territory as yet undeveloped had been opened up. This, however, is something that should be reserved for publication at the so-called psychological moment. Meanwhile, the renovation must be in process of fulfillment.

If the business has not been incorporated, this may properly be considered, and almost any well informed accountant or attorney can handle the situation. But this does not affect an escape from the ultimate and most essential duty of the entire preparation,—the adjustment of the concern's particular family skeleton—the financial statement or balance sheet. For in that single document is written the success or failure of the program. It tells the story of wastefulness and inefficiency; of ignorance and debt. For, after all, whatever plan may appear best suited to public requirements, the ability of the management to obtain financial cooperation becomes a question of the strength of its own condition.

Estimating Your Own Credit Value

With this in mind, every forward-looking proprietor or manager of a small plant will do well to examine his affairs through the spectacles of a credit man. He must ask himself a series of questions, and find the right answer to each one. Among those on the list that stand out prominently are: Do we use acceptances in our business, and would they be beneficial? Are we employing the customary credit terms in both our buying and selling? What is the condition of our cash on hand? Is it adequate? Do we use the right method of determining depreciation? Do we owe too much or not enough for a business of this character, and at this time of year? What is our trade reputation? How about our purchasing? Do we buy enough to get quantity prices, or are we buying too heavily? Can we collect the accounts now payable? Have we figured a proper ratio of credit losses? Is our manufacturing method efficient? And so on. For these are but a few of the questions that the financial statement calls up.

But in this detailed catechism lies the root of successful financing and, hard as it may be to buckle down and work through, it is infinitely easier than to acknowledge ultimate failure. Moreover, the management that unflinchingly goes into this business of house cleaning, as a preparation for future financing, finds that the more thorough-going a job it makes of it, the easier it is to move back in after things are clean.

Many Possibilities Shown in Western Manufacturer's Agency

Effective Work Done by One Manufacturer's Agent in Spreading the Electrical Idea by Developing the Possibilities Open to a Factory Representative is Pointed out by a Competitor

BY MAX LOEWENTHAL

President, Globe Commercial Company, San Francisco

TO the various unsolved and presumably "unsolvable" problems of the ages, such as perpetual motion, and the transmutation of metals, modern economic conditions have contributed additional mysteries one of which has persistently defied analysis and classification. We refer particularly to the Manufacturer's Agent, a much-maligned and ill-understood member of our modern business



Although the Western Agencies, Inc., sells only to dealers and jobbers, by the use of attractive window displays in a district adjacent to the retail shopping section, they have helped sell the electrical idea to the public.

organization. He has been maligned, no doubt, not only because he and his status have been misunderstood, but, largely because, as in all new fields of endeavor, many neophytes have entered without a knowledge of its manifold requirements and poorly equipped by reason of lack of business experience and financial stability, to cope with a complex situation and assume the requisite and unescapable responsibilities.

Unfit Have Been Largely Eliminated

Fortunately the situation has been clarified and the duties of a business agent have been more clearly defined through a process of evolution. The entrance into the field by firms and individuals whose business experience, financial responsibility and understanding of business ethics entitle them to the confidence of the trade and the public has also elevated the Manufacturer's Agency to a "profession" requiring well-defined and high-class qualifications.

Primarily the Manufacturer's Agent must have a knowledge of salesmanship in its broadest sense, for he assumes the duties of local salesmanager or salesman for one or more factories, generally located at a considerable distance from his field of operations.

He must have a comprehensive knowledge of business procedure, for the factory's interests and the execution of its sales policy are to a large extent placed in his hands. This includes, of course, not only broad vision as to the selection and handling of the trade channels through which the merchandise in question had best be distributed, but also a sense of appreciation of the financial stability of such channels with special reference as to proper discrimination in the granting of credits, whether the agent does his own billing or whether this is done by the factories who depend largely upon the Manufacturer's Agent's judgment in this respect.

Again, the Manufacturer's Agent should have sufficient finances to enable him to conduct his business for the best interests of the factories he represents, such service including the proper display of samples, the adequate storage and handling of merchandise, employment of sales and office help, carrying of customers' accounts (in some cases), making occasional trips to the factories, etc.

Manufacturer's Agent is Important Link

The demand for and the ability to measure up to all of these qualifications has already eliminated many irresponsible individuals from this field, which is being recognized as an all-important link in the chain of modern merchandising by manufacturers, who cannot in most cases adequately cover the en-



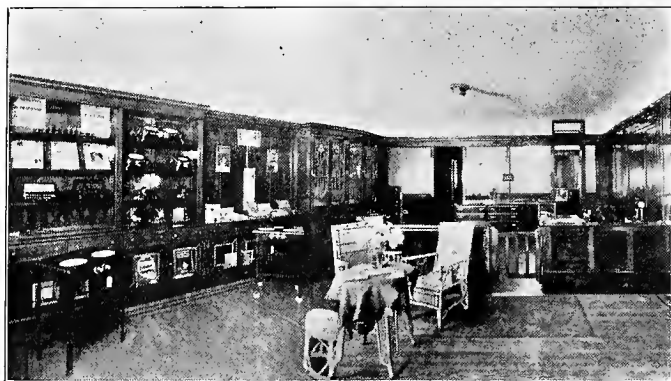
A full line of ranges, with hot water attachments and fixtures are connected in the handsome display room. Dealers and jobbers are encouraged to take advantage of this and bring their customers for a demonstration.

ormous territory over which they want to distribute their merchandise. Jobbers also welcome a local and well-informed factory representative, and the dealer can secure through this direct source accurate and authentic information regarding the factory's product and be assured of service, in the case of

appliances, which he in turn can transmit, as a selling argument, to his prospective customers.

As a factor in this process of elimination, above referred to, a number of firms and individuals have appeared who are maintaining the high standard which has earned for this new branch of our modern, commercial development an enviable reputation and a lasting place in the complex system of modern merchandising.

The greatest need for the establishment of a factory agency lies within territory distantly removed from the factory itself, at which distance it



Easy chairs adjacent to tables upon which manufacturers' literature is displayed make the office an attractive place for jobber and dealer to bring their customers. A full line of appliances is also on display.

is difficult and expensive to direct a home sales force and where local trade conditions must be studied and met by a force of men always on the ground and thoroughly conversant with ever-varying situations. The further away from the factory or source such an agency may be, the larger will be the territory allotted in most cases, and the greater, therefore, will be the responsibility resting upon the shoulders of those to whom the factory's interests may be entrusted.

It is most natural then that we should find the Pacific Coast an inviting, though not always fertile, field for the creation and elimination of "M. A.'s" of innumerable varieties.

And, it is, therefore, with considerable gratification that the writer, backing his judgment by many years of experience along these lines and trying to prove himself worthy of having the "M. A." degree conferred on himself, can find among the large number of establishments on the Pacific Coast, one, which, in every particular measures up to the qualifications referred to in this article and which has won for itself not only the confidence of the factories which it represents, but also the respect and good will of the trade within the territory in which it operates.

Western Firm is Shining Example

This firm, "Western Agencies, Incorporated," has its principal place of business in San Francisco, with branches at Los Angeles and Seattle. The new San Francisco headquarters, some views of which are presented herewith, represent what may be said to be the last word in equipment of a Manufacturer's Agency from a view point of convenience and elaborateness of display and efficiency of storing and

shipping of merchandise. Contrary to custom of operating from a suite of offices, the premises are located on the street level in the most travelled wholesale section of the city, only one block from the retail shopping district, making it accessible to the jobber, dealer and customer who might wish to see a full line of the appliances on display or in operation.

With this idea in mind, the goods are not only artistically displayed in the spacious show window, 20 feet in width and 10 feet in depth, but within elaborate mahogany show cases and on tables a sample of each article is put in plain view, in the handsomely appointed display room. In another room all lighting fixtures are connected so that each fixture can be lighted separately. In the same room a range and other appliances can be shown in actual operation.

Novel Features Have Proven Great Success

That this inter-linking of "service" is appreciated by the trade is evidenced by the number of prospective customers who come to the place upon the solicitation of dealers and power companies who realize that a factory demonstration greatly augments the buyer's confidence. This has resulted in a large number of leads being given to the dealers. To complete this chain of cooperation stretching from factory to consumer, a complete service department has been equipped, with a competent mechanic in charge, and full sets of parts of all appliances and fixtures are carried in stock.

The entire comprehensive organization is working under the direction of N. Abrams, known throughout the the Pacific Coast and among the eastern manufacturing centers, as a capable and energetic sales producer and executive. He is ably supported by J. W. Thompson, sales-manager, who has for many years been prominently identified with nationally-known establishments.

The writer trusts that the description of the premises of Western Agencies, Inc., and the nature of the service being rendered, may contribute a formidable alibi in behalf of the Manufacturer's Agent, if the need for the same ever existed.

Experimental Radio Market News Service

A daily market report prepared by the U. S. Bureau of Markets is now being sent by radio from the laboratory of the Bureau of Standards. This report is known as the Daily Radio Marketgram. It is about 500 words long and gives prices and market conditions of fruit and vegetables, grain, dairy products, hay, feed, and seeds, livestock and meats of the principal markets in the nation.

This service was started as an experiment to determine whether the distribution of market news by radio could be conducted in a satisfactory manner. It is probable that this experimental service will be extended by the transmission of market news by radio from several other stations, including some in the mid-western states.

Well Equipped Ports Handle Pacific Coast Commerce

One of a Pictorial Series Featuring Interesting Applications of Electric Service, Advances in Home, Industrial and Power Construction and Noteworthy Developments in Western Progress



The Pacific trade from all of Canada has its outlet through the port of Vancouver, B. C., which is one of the foremost shipping centers of the Pacific Coast. The Dominion has erected a grain elevator here and important harbor improvements are planned.



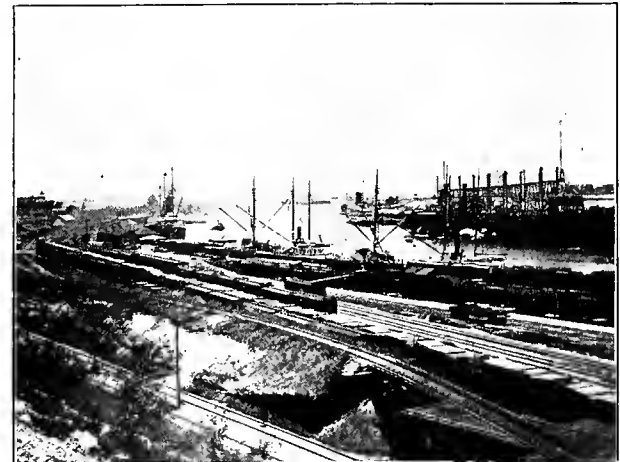
Three quarters of a billion dollars in foreign and domestic commerce passes through the port of Seattle every year. To handle this tremendous trade, Seattle has outfitted its municipal piers and warehouses with extensive electrical equipment of all kinds.



San Francisco has one of the largest landlocked harbors in the world, with forty or more piers, over which forty per cent of the foreign commerce of the Pacific Coast is handled. The larger piers devoted to foreign trade are equipped with the most modern electric labor saving devices for handling freight expeditiously and flexible trains of electric trucks care for much of the water front transportation.



Portland records how the most rapidly growing foreign commerce of any port on the Pacific Coast, full fifty per cent of the exports representing local products. An electrically operated grain elevator and other electrical conveniences greatly facilitate shipment.



An electrically operated cotton compress and other mechanical devices help to handle the great volume of Southwestern products which pass through Los Angeles, where some of the most active harbor improvement on the Pacific Coast is being carried on.

Study Course

A University Accounting Course for the Contractor-Dealer and the Business Men in the Small Industrial Plant

BY PAUL B. KELLY

XV—THE PRACTICAL OPERATION OF THE STANDARD ACCOUNTING SYSTEM—CALCULATION OF OVERHEAD PERCENTAGES AND TURNOVER RATES

The monthly Summary of Operations and the monthly Balance Sheet produced by the Standard Accounting System yield a very considerable part of the information needed by the contractor-dealer. The use and significance of the figures that appear in these two statements do not need further elaboration. In this regard, it may be mentioned that the introductory article of this course contains many suggestions as to the way in which the contractor-dealer may use the facts thus made manifest.

However, there are other facts that the contractor-dealer must know that can be secured only by a little further calculation. The monthly Summary of Operations is a statement for the business considered as a whole. But the contractor-dealer does two distinctly different types of business—merchandising and construction work. Each of these activities requires different kinds of expenditures and entails different rates of overhead. In any contractor-dealer establishment, the portion of the profit derived from each may vary greatly. One activity may be carried on at a profit, while the other is conducted at a loss.

The picture of the business as a whole which the monthly Summary of Operations presents is very useful in checking the leaks, for income tax returns, and for other purposes which necessitate the consideration of the business as a unit. But in order to find out what each class of business does and to make sure that it stands on its own feet, a statement is needed which will show for each class of business the amount of sales, the cost of sales, the gross profit, the overhead expense, and the net profit. In short, the electrical contractor-dealer needs two monthly summaries of operation instead of one.

The most convenient and economical way of securing these two summaries of operations is to produce one combined statement of the kind that the Standard Accounting System provides and then to "split" it in two. The process is very simple. The chief requisite is a good inside knowledge of the particular business for which the split is to be made.

"Splitting" the Monthly Summary of Operations

Before reading the description of how this split is made, you should examine the example shown in the first of the accompanying illustrations of how this was done for the Acme Electric Co.

A columnar sheet provided with at least three pairs of columns is most convenient. Note the naming and use of the columns illustrated.

In the first pair of columns entitled "Combined Statements Produced by Books," the figures shown by the regular Monthly Summary of Operations are entered. The various items of income and expense should be arranged in the manner illustrated so as to show the gross profit, the total overhead expense, and the net profit.

Not all the items shown in the Monthly Summary of Operations are included when making the split. Items which refer to the expense of getting money or income from others for the use of money are omitted. These items are known as "financial" income and expenses. They vary in amount from time to time and from business to business. They are not included when the split is made because they would spoil the resulting statements for comparative purposes. The items omitted are: Cash Discount Allowed, Cash Discount Earned, Interest Paid, and Interest Received.

The second pair of columns is used for the entry of such portion of the various items of income and expense as is attributable to merchandising operations. The third pair of columns is used for the entry of the share of income and expense items assignable to construction operations. Of course, the term "merchandising operations" is synonymous with "store sales;" "construction operations" is equivalent to "construction sales."

In determining the basis upon which the numerous items shall be apportioned to the two classes of operations, no general rules can be laid down. Some items cause no trouble as to distribution because the exact amount due to each kind of operations is known; other items are easily disposed of because they are incurred for the sole benefit of one class. But many expense items are incurred for the joint benefit of both classes. In apportioning these items, a knowledge of the particular circumstances in each business and plain common sense and judgment are the only guides. The apportionment must be as equitable as practicable, all the attending circumstances being considered. A comment on the distribution of the items in the analysis illustrated will make the procedure clearer. Remember, however, that the exact basis of distribution used is equitable, perhaps, for this concern alone.

Editor's Note.—This is the last of the series of articles by Mr. Kelly on the use of the Standard Accounting System. A new study course will begin with the next issue.

The distribution of the first two items is easily made. The Sales Recapitulation Sheet classifies sales and the cost of sales into these two classes. By turning to the Sales Recapitulation Sheets for the month, the part of the "Sales Billed" figure which is store sales and the part which is construction sales may be found. The cost of each class of sales may be obtained in the same way.

Because it was designed for the sole benefit of the merchandising end of the business, the entire amount of the advertising was apportioned to merchandising operations.

All of the following items were assigned to construction operations because they were necessitated exclusively by this kind of business:

- Auto Expense
- Allowance for Depreciation on Autos
- Allowance for Depreciation on Tools

Each class of operations was allotted one half of the following items because it was considered that they were necessitated by one as much as the other:

- Stationery and Office Supplies
- Telegraph and Telephone
- Taxes
- Insurance
- Association Expense
- Warehouse Upkeep
- Allowance for Loss on Accounts Receivable
- Allowance for Depreciation on Merchandise

Because it was considered that this was approximately the ratio in which the benefits were received by each, the following items were distributed two-thirds to Merchandising Operations and one-third to Construction Operations:

- Rent
- Light, Heat, and Power
- Postage
- Other General Expenses
- Allowance for Depreciation on Furniture and Office Appliances

A knowledge of the purpose of the expenditure caused the full amount of "Freight, Express, and Carting Unabsorbed" to be assigned to construction operations.

The "Salaries" item was distributed upon the basis of the time spent by the clerks and the management for the benefit of each class of operations.

After every item in the first pair of columns has been distributed to the second and third pairs of columns, the gross profit, the overhead expense, and the net profit on each class of operations can be easily figured. The illustration given is ample explanation of this point.

Condensed Summary of Operations

A "condensed" summary of operations is one that is extremely concise and is designed to eliminate detail. It is arranged as follows:

- Sales Billed
- Less: Cost of Sales Billed
- Gross Profit
- Less: Overhead Expenses
- Net Profit

A condensed summary of operations should be made each month for each class of operations. This entails no additional work as the necessary figures are available when once the Summary of Operations has been split in the manner just described. It only remains to list the figures on a columnar sheet each month for comparative purposes. A very convenient way of doing this is shown in the accompanying illustration.

Notice in the table above that each month is assigned a pair of columns. In one of the columns

ANALYSIS OF THE MONTHLY SUMMARY OF OPERATIONS
INTO
SEPARATE SUMMARIES OF MERCHANDISING AND CONSTRUCTION OPERATIONS

JANUARY 1920.					
ITEM	COMBINED STATEMENT PRODUCED BY BOOKS.		SUMMARY OF MERCHANDISING OPERATIONS		SUMMARY OF CONSTRUCTION OPERATIONS
Sales Billed	7075 05		2528 28		4546 77
Less Cost of Sales Billed	5132 46		1861 06		3331 40
Gross Profit		1882 59		667 22	1211 537
OVERHEAD EXPENSE					
Freight, Express, & Carting Unabsorbed	4 46				4 46
Salaries	814 50		116 52		698 28
Rent	52 50		35 00		17 50
Light, Heat, Power	33 35		22 23		11 12
Stationery & Office Supply.	12 38		6 19		6 19
Telegraph & Telephone	14 15		7 08		7 07
Postage	9 15		6 10		3 05
Advertising	65 04		65 04		
Taxes	25 42		12 71		12 71
Insurance	38 13		19 07		19 06
Association Expenses	40 00		20 00		20 00
Warehouse Upkeep	25 00		12 50		12 50
Auto Expense	81 96				81 96
Other General Expense	28 48		18 98		9 50
Allowance for Loss on Accts Rec.	16 00		8 00		8 00
Allowance for Dep'n on Furn. & Off. App.	9 00		6 00		3 00
Allowance for Dep'n on Autos	60 02				60 00
Allowance for Dep'n on Tools	7 50				7 50
Allowance for Dep'n on Mdse	41 50		20 75		20 75
TOTAL OVERHEAD EXPENSE		1378 82		376 17	1082 65
Net Profit		503 77		291 05	2112 72

Splitting the monthly summary of operations, provided for by the Standard Accounting System enables the contractor-dealer to see where each department of his business stands

ACME ELECTRIC CO.
YEAR 1920.

CONDENSED SUMMARY OF OPERATIONS							
ITEM	JANUARY		FEBRUARY		MARCH		
	STORE	CONSTRUCTION	STORE	CONSTRUCTION	STORE	CONSTRUCTION	
Sales Billed	2528 28	4546 77	1736 17	3950 50	1517 92	4111 43	
Less: Cost of Sales Billed	1861 06	3331 40	1365 41	4430 16	1067 84	2680 71	
Gross Profit	667 22	1211 537	350 76	1520 34	449 98	1230 72	
Less: Overhead Expenses	376 17	1082 65	401 10	1120 80	306 60	976 58	
Net Profit	291 05	2112 72	399 54		143 38	254 14	
DISTRIBUTION OF EACH DOLLAR RECEIVED FROM SALES							
ITEM	STORE	CONSTRUCTION	STORE	CONSTRUCTION	STORE	CONSTRUCTION	
Cost of Sales Billed	73 62	73 27	78 80	74 46	70 36	70 08	
Overhead	17 87	22 05	23 10	18 84	20 22	23 74	
Net Profit	11 51	14 68		26 70	9 92	16 18	
Total	100 00	100 00	100 00	100 00	100 00	100 00	
RATES OF TURNOVER							
ITEM	MDSE	ACCTS REC	MDSE	ACCTS REC	MDSE	ACCTS REC	
Balance on first of the month	1130 38	1067 948	1015 725	942 12	9295 98	8117 48	
Amount credited during the month	2267 56	7566 69	7685 34	8484 71	2595 80	5777 78	
Monthly rate of turnover	38 3 7	70 9 7	46 1 7	90 1 7	27 9 7	79 8 7	

Suggestion are given in the text for making a condensed summary of operations, as well as calculating the distribution of each dollar received and the rate of turnover from the various departments.

the condensed summary of "store" or "merchandising" operations is entered; in the other is placed the condensed summary of construction operations. Check the figures in the "January" column to see how they are transferred from the summaries resulting from the split of the Monthly Summary of Operations.

Distribution of Each Dollar Received from Sales

For the purpose of billing, or fixing prices, or making bids the figures shown in the condensed

summaries of operations should be reduced to a percentage basis. Each dollar received from sales must cover three items. These items are:

1. Cost of Sales Billed

2. Overhead Expense

3. Net Profit (or, Net Loss)
- By showing how many cents of each dollar of sales represent cost, how many cents represent overhead expense, and how many profit, the information shown in the condensed summaries is converted to its most usable form. The figures shown in the second table of the foregoing illustration carry the same meaning as those shown in the first. In the latter, however, the figures are arranged in a slightly different order and are reduced to the basis of one dollar.

In order to obtain figures showing the distribution of each dollar received from sales, the rule followed is:

“Divide each amount shown in the condensed summary of operations by the amount of sales billed shown by that statement.”

The procedure can be illustrated by showing how the distribution of each dollar received from store sales during January was calculated. Note how the rule operates.

ITEM	Figures shown in condensed summary of operation.	Divide figure in first column by total of sales billed	Distribution of each dollar rec'd from store sales in January
Cost of Sales Billed....	1861.06	÷ 2528.28	\$.7362
Overhead Expenses....	376.17	÷ 2528.28	.1487
Net Profit	291.05	÷ 2528.28	.1151
Total	2528.28	÷ 2528.28	\$1.0000

In calculating the distribution of the dollar, carry out the division to the one-hundredth of a cent. The distribution of each dollar received from sales of each kind should be calculated each month. For comparative purposes, the figures should be recorded on the same columnar sheet as the Condensed Summary of Operations.

Rates of Turnover

Rates of turnover are indices of how hard the business man is making his money work. Every asset has a rate of turnover. The electrical contractor-dealer, however, is interested chiefly in the rate of turnover in only two assets—Merchandise and Accounts Receivable. The introductory article contained a discussion of the nature of turnover rates and their significance. You are advised to review it.

Rate of Turnover in Merchandise.—The monthly turnover rate for merchandise should be calculated according to the following rule:

“Divide the amount credited to the Merchandise Account during the month by the balance of this account at the beginning of the month.”

The balance of the merchandise account at the beginning of the month and the amount credited to this account during the month may be obtained by referring to the Merchandise Account in the general ledger.

The rate of turnover in merchandise during January, 1920 for the Acme Electric Co. was calculated as follows:

Amount credited to Mdse. Acct. during January	4,264.56	
Balance of Mdse. Acct. on January 1st	11,130.38	= 38.3%

Rate of Turnover in Accounts Receivable.—The monthly rate of turnover in Accounts Receivable may be found by the following rule:

“Divide the amount credited during the month to the Accounts Receivable Account by the balance of this account at the beginning of the month.”

The data needed to calculate the rate of turnover for Accounts Receivable may be secured from this account in the general ledger. The calculation of the rate of turnover in this asset during January 1920 for the Acme Electric Co., was as follows:

Am-t credited to the Accts. Rec. Acct. during January	7,566.69	
Balance of Accts. Rec. Acct. on January 1st	10,679.49	= 70.9%

The data relative to the monthly rates of turnover should be listed on the columnar sheet in the manner shown by the table entitled “Rates of Turnover” in the foregoing illustration.

At the end of the year, the annual rates of turnover in merchandise and accounts receivable should be calculated. The annual rate of turnover is not found by adding the monthly rates of turnover. It is found in the following manner:

1. Add the balances on hand at the first of each month during the year, including the balance on hand at the beginning of the new year, and divide the total by thirteen to find the balance of the asset.

2. Add the amounts credited during each month and so secure the total amount credited to the account during the year.

3. Divide the amount credited to the account during the year by the average balance. The quotient is the annual rate of turnover for the asset.

Jones Trade Zone Bill Discussed by Banker

The methods by which the United States can develop her foreign trade and at the same time maintain a protective tariff were recently outlined by Henry M. Robinson, Los Angeles banker and former member of the Shipping Board, before the American Bankers' Association in annual convention through his discussion of the Jones “Trade Zone” Bill now before Congress.

Mr. Robinson in summarizing the provisions of the bill pointed out that, whereas, under the terms of the bill, both foreign and domestic merchandise may be brought into a free zone and there be broken up, assembled, and mixed with foreign or domestic merchandise or otherwise manipulated for re-export, direct manufacture as such may not be carried on within the proposed districts,—this in order to meet the wishes of interior communities and to allay their fears as to seaboard manufacture competition.

Mr. Robinson said in part:

“The elimination of port delays would be of tremendous economic advantage, for it is recognized that successful ship operation depends, to a great degree, an keeping the ship at sea.

“It is only through the adoption of a free zone policy that the protectionists, the ship operator and the foreign trader can meet on common ground and all that the Jones bill is attempting to do is to carry out scientifically what we are now doing most unscientifically through our bonded warehouses.”

Increasing Production in Industry

Shortcuts in Management and New Power Applications That Have Reduced the Cost of Manufacturing Processes or Increased the Rate of Production.

Ideas and Suggestions by Practical Men.

Electric Furnaces Preferred For Brass Melting Process

In answering a query as to whether the saving in metal when using an electric furnace in producing brass is sufficient to pay for the increased operating costs, the following has been received from the Electric Furnace Construction Company of Philadelphia:

"The answer to the question lies in the great number of electric furnaces installed for this purpose. Firms who are operating such equipment in their plant state that the electric furnace competes on a cost basis with the fuel fired furnace and very often shows a saving in cost of metal melted. In comparing operating costs it is necessary to take into account not only fuel costs, but also labor, overhead, interest and depreciation, maintenance and repairs, supplies and metal losses.

"The chief items that will show a saving when melting brass by electricity are labor, supplies (these would include crucibles) and metal losses. Very often the saving in the last two items will show a favorable balance for electric melting on the cost sheet. Against these items must be balanced the fuel cost (electricity), interest on the investment and perhaps maintenance, all of which will be higher for the electric furnace; but if the furnace has been wisely selected so that it will be operated to capacity a fair part of the time, the saving shown by the less metal loss, labor and supplies will more than make up for the increased fuel and interest charges.

THIS DEPARTMENT.

will be devoted to a discussion of practical problems of industrial operation and management. Readers' requests for information will be published in each issue, together with the answers to previous questions. It is hoped that readers will take full advantage of this opportunity to profit by the practical experience of others and to give others the benefit of their own discoveries. Space rates will be paid for answers which are published.

"On the basis of data gathered from firms who have used both types of furnaces, I believe we could unhesitatingly say that the electric furnace will show a saving over the fuel furnace when all the factors above are considered. If the more intangible assets of the former are taken into account, healthier shop conditions, more contented labor, etc., the case for the electric furnace is greatly strengthened."

Two brass furnaces installed by the Oregon Brass Works, Portland, comprising the first installation of the kind on the Pacific Coast, have almost paid the first cost of the equipment in the saving in time, labor and material during the first year of operation, and have proved satisfactory from the standpoint of convenience.

H. DREVER.

Philadelphia, Pa.

Amount of Power Required in Heating Processes

In the determination of the amount of electric power required in any heating process, a certain amount of general information must be secured before an intelligent calculation can be made as to the kilowatt hours and the kilowatt demand necessary for a satisfactory application. Points to be considered are:

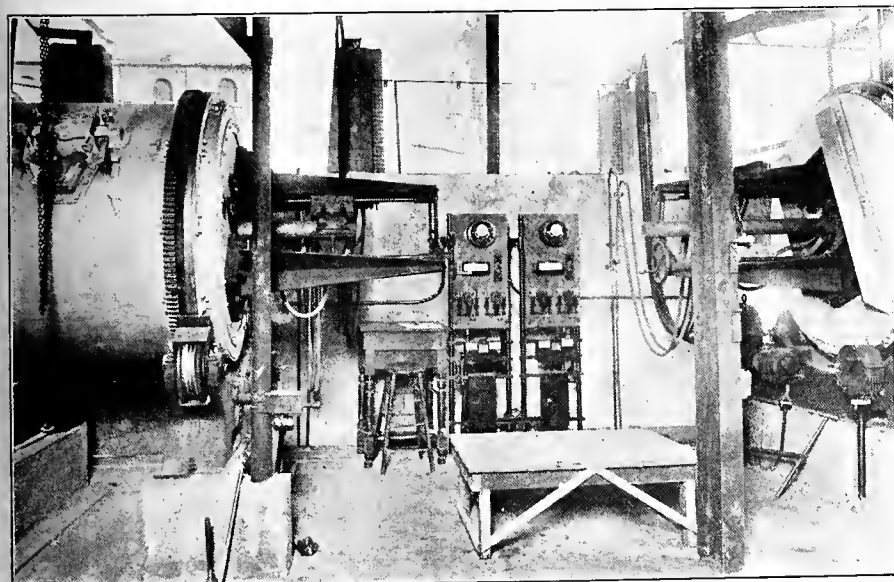
(1) The material or work to be heated: A given kind of material requires a definite amount of power to raise the temperature of that material one degree fahr. The specific heat has been determined for nearly all materials in use and is one of the factors in heat calculation.

(2) The initial temperature of the material or work, the maximum temperature, and the final temperature to which it will be heated: By initial temperature is meant the temperature at which the material is placed in the oven. This may or may not be room temperature, depending upon whether or not the material has previously been heated, and has had an opportunity to cool off completely. The maximum temperature is that required to produce a certain chemical change or a certain result in the heating of the material. The final temperature is often the maximum temperature, but not necessarily so.

(3) The size of the oven, furnace, or container: With a given exterior surface temperature, the power lost through radiation will be proportional to the exterior exposed surface; hence greater economy will be secured by having the container as small as possible.

(4) The kind of material from which the container is made: The radiation losses depend upon the rapidity with which heat is conducted from the interior surface to the exterior surface of the container. Steel conducts heat 1,000 times as fast as a high grade magnesia or diatomaceous earth; hence, one square inch of steel extending from the inside to the outside of the container will conduct as much heat as seven square feet of high grade insulation. The importance of eliminating bolts, rods, etc., extending through the container walls may thus be appreciated.

(5) Thickness of container walls: With the heating done in the interior of the container, the rate at which the heat will flow through the walls will be inversely proportional to their thickness. If the losses are a certain value with container walls of a certain thickness, the losses will be reduced to one-



First Pacific Coast installation of electric brass melting furnaces at the Oregon Brass Works, Portland, whose economy has almost paid for the equipment in one year of operation.

half that value if the thickness be doubled.

(6) Weight of movable and immovable racks or trucks within an oven or other container, and the initial temperature of same: These accessories absorb heat just as much as the work, therefore, in order to determine how much power is expended in the heating of such parts, the weight and initial temperature must be known. It is desirable to have as light racks and trucks as can safely be used, also to maintain them at as high a temperature as possible when not in use by keeping them in the oven with the doors closed when the oven is not in use, or by returning them to the oven as quickly as possible.

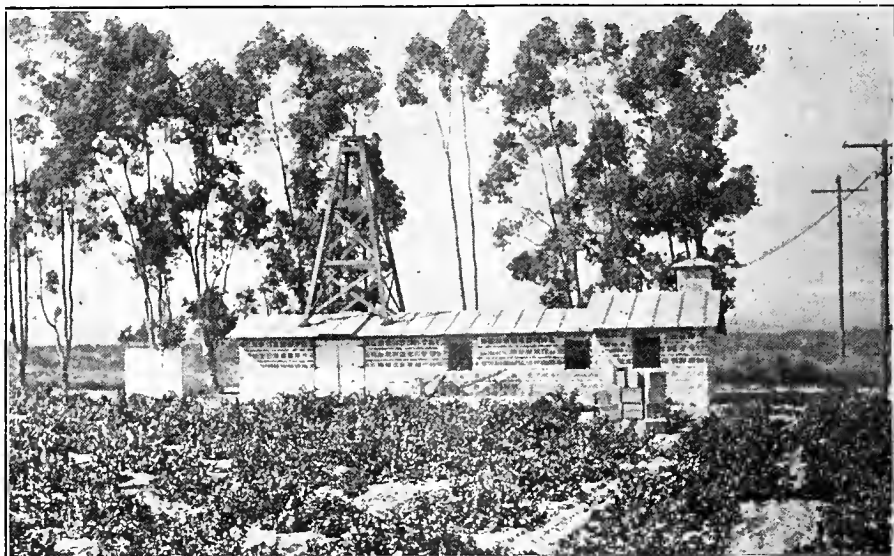
(7) The length of time the oven, furnace or container is out of operation between heats: All substances absorb heat; hence the walls of an oven, furnace or container will absorb a definite amount of heat in a definite temperature rise. The amount of heat initially absorbed by an oven may easily be three or four times that required for the work. If the oven is allowed to cool off completely after each operation, an enormous amount of heat is lost in proportion to that utilized. A heating installation should be designed so that the ovens will always be used at their maximum capacity, and so that when ovens are not in use they may be kept entirely closed.

(8) The amount of moisture to be evaporated: In a drying process, the work may be partly saturated with water, such as in the drying of powders, woods, leather, etc., or a thin film may cover the surface such as enameled or japanned products which are cleaned in a pickling tank, rinsed in clear water, and run into an oven for quick drying before being dipped in the enamel. Incidentally this method has another advantage in that in evaporating the moisture the work is also heated, so that upon being dipped in the enamel a better flow on the material is obtained, the dripping period reduced, the consumption of enamel reduced, and a better finish secured.

Spent Gases Effect Economy of Gasoline Engines

The effect of spent gases remaining in the clearance space of a gasoline engine cylinder at the end of the exhaust stroke has long been a subject of study and controversy on which recent experiments have thrown some new light, according to the News Bulletin of the U. S. Bureau of Standards. Despite a contrary tendency in earlier stages of the gas engine development, exhaust gas has been added to the induction system by recent experimenters in an endeavor to secure higher thermal efficiency.

The results of tests made to study the effect on power and thermal efficiency at full and part throttle when admitting exhaust gas under various circumstances has led the Bureau to conclude that "the dilution of the charge by the spent gases remaining in the clearance volume makes it impossible at low throttles to employ those air fuel ratios which if they could be fired would yield the maximum efficiency."



Electrically driven pumping plant near Los Angeles which, by supplying one square mile of vineyard with water, increased the value of one year's crop by \$125,000.

Grape Production Doubled By Electric Pumping Plant

A \$40,000 investment in an electrically driven pumping system for watering a 630-acre vineyard was recently made by John L'Afourcade of Cucamonga, Cal., with the direct result that the tonnage of grapes produced was more than doubled. The net value of the crop after the irrigation system was put in operation is said to be \$125,000 more than the crop raised without irrigation.

The decision to irrigate was made

after L'Afourcade was shown that by actual count 175 grapes from irrigated vines would fill a container that would hold 400 grapes grown without irrigation. The pumping plant was unusually expensive because it had to be designed to deliver 630 gal. per minute under a head of 490 ft., which is said to be a world's record for a pump of this type.

The total electric power costs for pumping 12 hours per day from April 15 to Aug. 15 was less than \$4.00 per acre. The entire hydraulic end of the electrical pumping installation was manufactured in Los Angeles.

Larger Dredges Build Higher Levees on Sacramento

World records have been established recently in the development of larger dredges for canal and levee work along the Sacramento undertaken in connection with reclamation and drainage projects. Improvements in the design of dredges built for this service have been based almost wholly on experience gained on the Sacramento River itself. This is largely because nowhere else were such wide canals and high levees being constructed with floating equipment. In fact, works of the size undertaken there were not generally considered feasible with a single handling of material.

Dredges are now in operation on the Sacramento with booms ranging up to 240 ft. in length with which canals having a bottom width of 500 ft. have been built without rehandling the material. The long booms also enable these dredges to construct levees while the dredge floats at levels as much as 40 ft. below the levee crest.

Two factors that have influenced this unprecedented dredge development are the desirability of having a berm at least 30 ft. wide on the river side of the high levees as a protection against sloughing during high water and the need for equipment that could handle even the largest levees during periods of low water.

Dredges with booms long enough to build the highest levees at any stage of the river are fairly sure of work the

year round, while those with short booms have a limited field of operation in low water periods and may be idle for a considerable part of the year. The Sacramento Valley practice of basing the rate of rental on the length of boom has also been an incentive to the longer booms. The difference in cost of handling material with large and small dredges is not great but the general rule is, the larger the dredge the greater the yardage.

Painting Boiler Rooms White Aids Illumination

Prevention of accidents, leakages, and explosions from escaping gases or oil has been accomplished on oil burning vessels in the United States navy by the simple expediency of painting the interior of the boiler room and the bilges under the boilers white. Heretofore boiler rooms have been difficult to light satisfactorily because of the lack of reflecting media. This was particularly true of coal burning vessels. With the supplanting of coal by oil, the boilers and pumps are the only parts of the boiler apparatus that need not be given a white coating. In some ships even the boilers have been painted. Experience shows that by painting the bilges underneath the boilers white and by illuminating them with two or three lights, any oil leakages can be readily discovered and repaired before accidents that might occur from the explosion of the gases formed.

Western Dealer, Jobber and Agent

Business building suggestions for the store—
Distribution and warehousing methods—
Advertising and sales promotion ideas

Menace of the Curbstoner to the Contracting Business

BY W. D. MORIARTY
Field Representative
Northwest Electric Service League

There are two kinds of curbstoners in the electrical contracting business, but only one is a menace or the source of unfair competition. The curbstoner who is really a comer, one who is going to make a success and establish himself in business, is an asset to the business as a whole and not a menace. If he is to succeed he must make a profit on what he does. If he is to succeed he must be paid for the time he spends soliciting business as well as for the time he works with tools. Any man who is going to succeed must have business sense enough to know this, and his bid for any job will include not only the cost of materials and a fair price for his labor on the job, but a profit which will pay him for his risk and the time and effort in soliciting business.

The curbstoner who is really a menace to the business is the man who will never make a business success. He may be so devoid of business judgment that he can't really determine how much the material will cost nor how long the job will take him. In times of unemployment there are many such men, some of them really intending to make up by long hours for low bids and some of them willing to bid as low as they need to in order to get the job, even though they know they will never be able to pay the man from whom they bought their supplies.

Sales Increase 4.8 Times With Attractive Window Display

That attractively trimmed windows are effective sales agents was proved some time ago by a test made in San Francisco with 19 electrical retail merchants. For an entire week a record was kept of the sales of these agents of a semi-staple product which they were regularly selling. Then the windows of all the 19 retailers were attractively dressed to display this particular product, and the displays maintained during the following week.

During this second week the aggregate sales of these 19 merchants amounted to 4.8 times the sales which they made during the preceding week.

This record unquestionably shows to electrical retailers the value of attractively trimming their windows with the products which they have to sell.

"Your Home Is Not Complete Without Electrical Convenience Outlets" is a slogan powerful, simple and effective. See that it gets over to the engineer, architect and home builder.



The electrical industry furnished one of three cooperative exhibits at the recent Trade Exposition in Los Angeles. Almost every conceivable electric device and appliance was demonstrated in the booth which was visited by approximately 300,000 people. The exhibit showed in a winning way the convenience and comfort of electrical devices.

Outline of Business Essentials Issued in Denver

Electrical Cooperative League Publishes Resume of Speech for Distribution to Intermountain Contractor-Dealers.

News of activities, announcements and information of value concerning the industry will be presented to members of the Denver Electrical Cooperative League in an informal publication known as "The Bulletin" which is to be issued monthly by the league. The first issue contains a resume of an address given by Laurence W. Davis before a meeting of the electrical industry in Denver on the subject of a successful contractor-dealer's business.

Mr. Davis sets down the fundamentals for a successful business man as follows:

1. He must have a definite purpose, both to make money and to serve well.
2. He must have character backed by aggressiveness, intensity, cheerfulness and open mind and initiative.
3. He must believe in cooperation, in seeking the best from others, in giving the best to others, in supporting his national and local organizations and in reading his trade journals.
4. His business must be founded on the idea of service, an obligation owed to himself, to the industry and to the public.

The location of the contractor-dealer's business is an important factor and should not be measured entirely from the standpoint of rent. Traffic, the op-

portunity to draw from the passing crowd, the nature of surrounding buildings and business, and the appearance of the store front are of greater importance than the amount of rent.

Economy in the amount of rent paid may prove an asset or a liability, based upon the results obtained in the location selected. To secure a store in a cheap location which does not obtain local trade may make that store a liability; on the other hand, rental of many times that lower amount may prove a great asset if it is balanced by drawing features which give the store a merchandising turnover of sufficiently greater amount. Do not measure rent in dollars and cents but rather as a percentage of the gross business done by your store.

Factors which determine the success of the location of the store rather than the rent include the intensive use of windows, the arrangement of the interior of the store and salesmanship.

Organization is fully as important as any of the qualifications for a good business. In planning the organization points which must be remembered are thorough management by the executive, accounting, financial relations, stock, selling, service and last but not least, advertising and display.

Electrical Homes Opened in Intermountain District

Salt Lake City Home is Visited by 15,000 People During the Two Weeks Period it is Kept Open by Cooperative League While Denver Launches Building Program to be Completed Thanksgiving

Denver's first electrical home is a reality. Through the efforts of the Electrical Cooperative League a desirable site has been secured, construction started and the house will be ready for inspection about Thanksgiving time. Men in the industry were faced with a difficult problem when the decision was reached to build the home. As there was little or no subdivision or special addition development in the city, there was no opportunity to combine the construction with real estate or building firms. The league organized its own company and incorporated for \$25,000, all capital stock. Money necessary for immediate developments was subscribed by the industry and stock issued in return. Firms handling all types of building material agreed to accept stock in payment for material. The organization which will build the home is known as "The Electrical Home Building Company." Officers have been elected and a home building committee selected, which is supervising the work.



Architects' conception of the electrical home which is being constructed in Denver by the Electrical Cooperative League and which is to be completed by Thanksgiving.

The house, the plans for which were drawn by E. P. Varian, will be modeled after the California-Spanish type of architecture. It will include seven rooms in which there will be more than one hundred convenience outlets. Features in the construction of the home will be a variegated tile roof and tinted stucco exterior finish. No detail will be left undone to make the home as attractive as the California and other homes have been. More than fifty electric appliances will be demonstrated.

The site selected is two and one half miles from the business district of the city on one of the main connecting links in Denver's boulevard system, in a section where the houses are of a quality in keeping with the Electrical Home. The league members propose to erect other electrical homes in various districts of Denver and in other cities of the state as soon as the present undertaking is completed.

As an example of an up-to-date home for people of moderate circumstances demonstrating the newest and most convenient methods of house wiring for the use of electric appliances and correct, harmonious illumination, the Salt Lake City Electrical Home has been added to the list of the score or more such houses in the West either completed or under construction. Built under the direction of the Rocky Mountain Electrical Cooperative League, the home was visited by approximately 15,000 people during the period of September 17 to October 1.

The home was constructed by L. B. Swaner and equipped with electrical appliances under the direction of the league. It contained approximately 150 outlets and 50 switches so arranged as to afford every convenience to the housewife. The house was fashioned after the New England type of architecture and included seven rooms together with a basement and a garage.

During the period the house was open for inspection guides were furnished who explained the practicability of every outlet and appliance to the visitors. In a prominent place in the house was a sign which read: "No solicitation, demonstration, or quotations made during this exhibition. Information will be cheerfully furnished by any electrical dealer."

Each room carried an individual and distinctive tone not only in the arrangement of the lights but also in the general effect. Wall brackets and portable lamps furnish the illumination in the living room. There is an electric log in the fireplace and an electrically operated piano and cabinet phonograph. The main bedroom is provided with bracket lamps in conjunction with boudoir lamps on

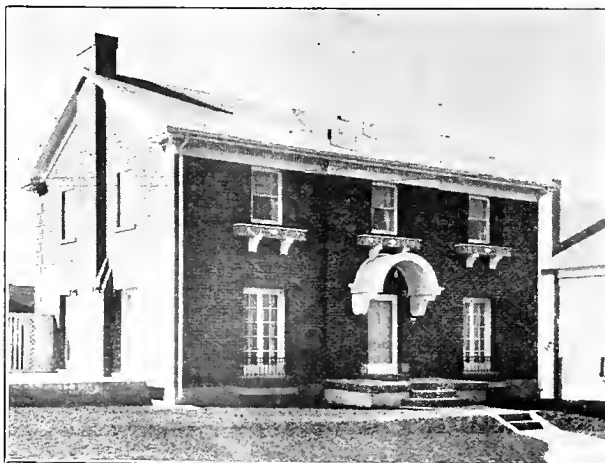
the dressing table. A master switch at the head of the bed controls four cornice lights on the exterior of the house which are designed to provide a sense of security from night prowlers.

The dining room is arranged in an ideal manner for electric service. The room is lighted from a central fixture. The floor outlet under the table permits the use of cooking appliances without disconnecting any of the lamps. A porcelain plate, permitting the use of more than one appliance at a time, is placed underneath the table top. The buffet is provided with a duplex outlet for attaching two candle sticks and another for cooking appliances. The tea cart is wired for the use of electric appliances and may be attached in any of the rooms. The kitchen is also complete in every detail from the electric range to the electric exhaust fan for ventilation.

The home is provided with an electric refrigeration plant located in the rear hall. The laundry is also fully equipped with modern labor saving conveniences for the housewife.

In the furnace room the temperature of the house is regulated by automatic regulation of the dampers by thermostatic control. The garage contains an electric soldering iron, a bench motor, rectifier, and a portable air compressor for pumping up tires.

Officials of the Rocky Mountain League agree that the electrical home is an immense factor in the education of the public to a real understanding of the doctrine that electricity is the modern servant in the home.



The newest adjunct to the score or more of electrical homes in the West is the one recently completed under the direction of the Rocky Mountain Electrical Cooperative League in Salt Lake City which was visited by 15,000 people.



The interior of the Electrical Home in Salt Lake City contained every modern convenience for the housewife. The interior of the living room shows the simplicity characteristic of the type of homes built in the West.

Make It an Electrical Christmas and How to Do It

Cooperative Advertising as the Basis of a Holiday Sales Drive for the California Electrical Cooperative Campaign

Cooperative advertising among dealers in certain types of commodities is detrimental. Competitive advertising rather than cooperative is the life of those businesses founded upon the sale of necessities. There will always be a demand for meat, so why should the butchers pool their advertising fund? Instead they must advertise competitively—presenting the reasons why customers should patronize them in preference to the shop across the street. There would be nothing gained by cooperative advertising of the fact that two grocers sold the same thing. And so it is with bakers, dairies, clothiers and shoe merchants.

And there is another class of dealer who would derive no profit from cooperative advertising. The dealer in non-essential products which are already in demand. For example, a bookseller, a florist and a candy merchant. Such dealers must advertise individually, and feature their individuality, to realize their returns upon their advertising.

But a different condition exists for the dealer in products for which there is no demand. And in this class is the electrical dealer. He could spend hundreds of dollars advertising the fact that he had electrical appliances for sale; but if there was no demand for electrical appliances he would realize but small returns on his expenditures. And his individual advertising can do but little toward creating a demand. To accomplish that requires thousands of dollars, where he has but hundreds to spend for the purpose.

The potential market of the electrical dealer can never be opened until a demand for electrical appliances is created and that never can be accomplished by a little sputter of advertising on the part of one dealer, then a little sputter

of advertising on the part of another. There is only one way that we can ever hope to open wide the market—a consolidated and cooperative effort on the part of the entire electrical industry to show the public why it should use electrical appliances, thereby creating demand. After that, on with the individual advertising, and on with the competition. For after a good, healthy demand has been born competition is the nurse which will mother it into manhood.

With this goal in view an effort is being made by the California Electrical Cooperative Campaign to make this coming Christmas an electrical Christmas. There is an increase in business in the proposition for every dealer of electrical appliances if it goes over. If it fails he will be where he is today.

When it is said that plans are being laid for such a sales campaign it does not mean that the Cooperative Campaign is going to send a letter to each dealer telling him he should exert special effort to sell more appliances at Christmas time than during other periods of the year. Real, definite, constructive plans are being made for a campaign, which, to go over, must have behind it the shoulder of the entire industry. There will be included special window trims, slide advertising, newspaper advertising, direct mail, and addresses to club luncheons and meetings.

The week of December 4-10, inclusive is to be known as Electrical Week, and every effort is to be made to have it recognized as such outside the industry as well as within. Although the pressure of the campaign is to be brought to bear during the entire period from the middle of November until Christmas, the main force will be exerted during the first week of December, Electrical Week."

The slogan adopted for this campaign is "Electrical Gifts are Practical Gifts—Make it an Electrical Christmas;" and this message is to be hammered home by every possible means.

The fate of this sales campaign lies in the hands of the industry. The Cooperative Campaign can plan sales-promotion, but it cannot move goods off the dealers' shelves; that, to be accomplished, requires real cooperative effort to put the plans across.

Absolute faith that "the campaign will go over" and an individual determination to personally see that it goes over will result in its success and increased sales. But we must work together.

All must aid in putting over the slogan, "Electrical Gifts are Practical Gifts—Make it an Electrical Christmas". One of the cheapest ways in which this message can very effectively be driven home is for every member of the electrical industry to estimate approximately how many letters he sends out in a month, then send that many letterheads and envelopes to the printer and have the campaign slogan printed on them in clear, red letters. Across the top of the letterheads and envelopes it should read "Electrical Gifts are Practical Gifts"; and across the bottom "Make it an Electrical Christmas". In this way every letter sent out by anyone in the electrical industry will tell the same story; and the day-in-and-day-out repetition of that message for one month cannot help but register upon the minds of the public. Your correspondence must be carried on anyway so the only additional cost would be two or three dollars per thousand for printing the slogan on your stationery.

Christmas time isn't a long way off and Christmas buying will start before very long. Shall we sit back and watch the opportunity pass as it has other years, or shall we work together to see that the electrical industry gets its share of the Christmas business?

Apartment Houses Are Promising Field for Electric Heating



The effectiveness of electric heating in apartment houses, hotels and homes can no longer be overlooked. There has been installed in the Merritt-Grand Apartments in Oakland, California, a complete electric heating equipment consisting of individual units in each room. Each apartment contains a 1400-watt Majestic heater in the living room and vestibule and a 900-watt heater of the same make in the dining room. The heaters are wired to one meter and the current furnished to the tenants without charge. The flexibility and cleanliness of this type of heat are two of the greatest arguments in its favor. Much has been made of this in advertising by the owners of the apartments and it is stated that other similar installations are planned to meet the competition. The illustrations show the exterior of the apartment, which is one of the most exclusive in the city, and the arrangement of one of the living rooms.

Activities of the West

A Business Man's Department Devoted to Events and Developments in Western Industrial Centers—Including News of Interest to Readers in Public Utility, Industrial and Trade Fields

New Project Planned in Utah

Los Angeles Man Proposes 500,000 Hp. Hydroelectric Development

William Schuyler Post, of Los Angeles, has filed application with the state engineer of Utah for the use of 8000 second-feet of water from the Green river with which to develop an estimated 500,000 hp. in electrical energy. The plan is said to be backed by individual Los Angeles capitalists and has no connection with the projects of the Southern California Edison Company for development of power on the Colorado river, of which the Green river is a tributary.

The filing contemplates a dam 150 ft. in height, and a reservoir for the storage of 1,500,00 acre-feet of water.

The filing of Mr. Post is for the diversion of waters, which means the entire flow of the Green river at a point about a mile south of the confluence of the Minnie Maud creek with the Green river. There he plans to place a dam 150 ft. in height, and thence would conduct the water by gravity thirty-five miles by canal to a point about ten miles up the Green river from the city of Green River. He estimates, according to the application, that he would obtain a head at that point of 750 ft. and that with this volume of water, 8000 second-feet, he could develop 500,000 horsepower.

The canal, according to the application, would be ninety feet wide at the top, fifty feet wide at the bottom, and would carry water twenty feet deep. Twelve 5000-horsepower turbines would be installed and the power would be used in municipalities or on railroads in Utah and neighboring states.

Gypsum Corporation Is Formed By Los Angeles Men

Formation of the California Gypsum Corporation with an authorized capital of \$3,000,000 has been perfected in Los Angeles. The company owns 1200 acres in Imperial county, twenty-two miles northeast of El Centro, which contains vast deposits of the non-metallic substance.

The company has announced that it will build an 18-mile railroad from Coyote Wells to the mines while a grinding and calcining plant is being erected there. The plant will have a capacity of 100 tons daily for bulk shipment to Los Angeles and San Diego. Later it is proposed to erect a 500-ton plant in Los Angeles for the manufacture of wall plaster board and partition blocks.

The two plants and the railroad are estimated to cost more than \$1,000,000. Charles F. Guthridge, one of the founders of the Home Telephone Company, is president of the corporation.

Tacoma to Spend \$900,000 on Harbor Development

Facilities to be Added to Port Terminal for Increased Trade; Will Install Electric Cargo Handling Equipment

Harbor terminal facilities of the port of Tacoma are to be immediately increased to handle the rapidly developing foreign trade of that city, following the sale of \$900,000 in bonds recently voted for the construction of a huge addition to Pier No. 2, one of the units of the city's new port terminal. Bids are to be issued shortly for erection of a wharf and terminal sheds at the pier.

When the contemplated addition is completed, Pier No. 2 will be 674 feet wide and 1200 feet long, with transit sheds 180 feet wide on each side of the pier. In the center will be a multiple story warehouse of reinforced concrete and steel. On each face of the pier will be two standard gage railroad tracks on a level with the dock and behind each transit shed will be four standard gage depressed tracks. The transit sheds will provide clear head-space of 25 feet from the floor to the roof trusses.

The present plans call only for the erection of one transit shed and the completion of one side of the dock. The Tacoma Port Commission points out that the funds from the bond issue are sufficient for but a part of the proposed developments.

A portion of the bond issue will be used for the purchase of additional cargo handling equipment, most of which will be automatic and electrically

operated. Funds are also on hand for the primary unit of the massive cold storage plant which is to be constructed in conjunction with the terminal facilities. When completed the cold storage plant will have a capacity of 1,000,000 cubic feet and will cost between \$350,000 and \$400,000.

Included in the equipment which will be installed in the warehouse and transit shed are a series of monorail electric carriers with a speed of 700 feet per minute for expeditiously handling freight. On the face of the dock will be four pillar type traveling boom-crane for unloading cargoes from the ships to cars. A stiff-leg derrick of 100 tons capacity will be placed at the water extremity of the dock for handling heavy freight, either from cars or barges to the vessels. Locomotive cranes of various capacities will also be purchased as a part of the new equipment.

It will be necessary to dredge approximately 500,000 cubic yards along the face of the pier to make it accessible for the larger types of ocean-going vessels without the use of tugs.

Officials estimate that the total cost of the terminal facilities when completed will be \$2,500,000. Work on the additions to Pier No. 2 is to be rushed so that the facilities will be sufficient for handling the commerce of the port next year.

Portland Power Company Issues \$10,000,000 in Stock

In order to provide capital for extensions and betterments, but primarily to finance the construction of a large hydroelectric project, the Portland Railway Light & Power Company has authorized the sale of \$10,000,000 of 7 per cent prior preferred stock, which will be sold in blocks as the money is needed. Much preliminary work has already been done on the so-called Oak Grove project which is capable of an ultimate development of 60,000 kw., and actual work will be started on the first unit of 20,000 kw. within the next year if proper financing can be accomplished. The large storage possibilities of this project insuring high load factor on the plant under all conditions render this one of the most desirable developments yet to be undertaken in this section. It is estimated that it will take three years to complete the first unit of the proposed plant and additional units will be added as demand for electric power make it necessary.

Pacific Gas & Electric Company Finishes Bartle Railroad

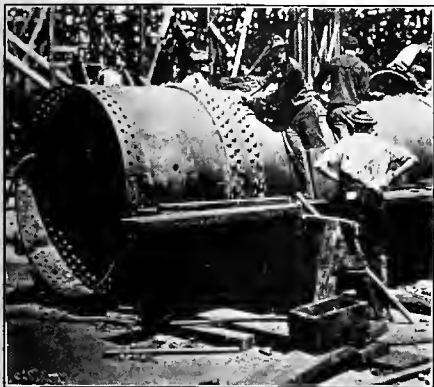
The last spike in the Pacific Gas and Electric Company's 33-mile railroad from Bartle to Pit River in Shasta county, California, has been driven and the line is now operating carrying freight to the power plants under construction on the Pit River. According to O. W. Peterson, chief engineer, the road has cost \$500,000. Four hundred men were employed on the line, which, including six trestles. Farmers in the district have endeavored to have the line declared a public utility, thus giving them an all rail outlet to the markets. No action has been taken on the question but the company has agreed to haul the farmer's freight and products so long as it does not interfere with its own haulage.

Thousands of people visited the First Annual Industrial Exposition held in Oakland, California, during the first week in October for the purpose of arousing interest in home products.

Los Angeles Shipyard Turns Out Huge Penstock Unit

That shipyards will be able to turn their facilities to good industrial use and fill in the curve of production which has suffered from the slump of shipbuilding, is the belief of those familiar with the situation.

Recently a steel pipe six feet in diameter, 22 ft. 3 in. long, formed of marine steel 1 1/16 inches thick and weighing 13 tons, was quickly fabricated at the plant of the Los Angeles Shipbuilding and Dry Dock Company to replace a



Western ingenuity was recently demonstrated when a Los Angeles shipyard in short order fabricated a huge steel pipe to replace a portion of the broken penstock on one of the Southern California Edison plants.

broken section in the penstock of the Big Creek station No. 8 of the Southern California Edison Company.

This section of penstock was subject to full pressure of the 800-ft. head and without any stay-bolts was put together with 1600 of the largest rivets used in this section of the country, namely 1 1/2 inches. In order that no time might be lost the pipe was hauled overland by motor trucks with relief crews to make the long drive north without delays in route.

California Syndicate Files on Potash Tract in Utah

A syndicate of California business men has filed upon 25,000 acres of potash land in Utah extending from the west boundary of the property of the Utah Salduro Company, on the shore of the Great Salt Lake, almost to the Nevada line.

The filings were made on behalf of the California people by Frank Cook, a civil engineer of Salt Lake City. The application is for the lease of this vast acreage for the development of plants and extraction of potassium contents.

If the present plans of this syndicate are carried out it will mean the development of a gigantic industrial enterprise for Utah, especially if the proposed government tariff on potash products is finally passed.

A series of comprehensive charts suitable for filing which show the industrial, transportation and economical advantages of the city of Portland have been prepared by the Portland Chamber of Commerce. The charts include exhaustive data arranged in a most comprehensive form and will be sent out to various manufacturing and industrial firms throughout the country.

Optimistic Outlook For California Manufacturers

Industrial Survey of 600 Plants Made by Association Shows Situation Improved in All Basic Industries

Official statements concerning unemployment and business conditions in California overestimate the situation, according to a complete and comprehensive industrial survey compiled from the thousand members of the California Manufacturers' Association and just issued. Questionnaires were sent out to the entire membership and 600 replies received from the majority of the important industrial plants of the state giving exact data on both the industrial and business situation.

The questionnaire was very brief, asking only for a comparison of sales, output, workers employed and wage reductions with a normal year. The recipient himself was to determine what a normal year had been in his industry.

Optimistic reports were sent in by the following industries: food products, furniture, mattresses and pillows, oil, paints, paper boxes, picture frames, and printing. Manufacturers of lumber, millwork and boxes, and the sewing machine trades reported fair business conditions, slightly below normal. The most marked depression was shown in the metal industries, most of which are apparently marking time. Glass and leather plants also seemed to be in the doldrums.

J. R. Millar, president of the association and vice-president and general manager of the California Cotton Mills, Oakland, has made the following comment on the situation:

"It must be borne in mind that even though sales reports might be favorable, it does not follow that profits were satisfactory. Marking-down seemed universal.

"Regarding output as compared with capacity, many industries expanded and installed facilities during the war period, that are not required in normal times. Others again, have never run their plants to capacity.

"While there has undeniably been a diminution of workers employed—this has been due in many instances to the inevitable weeding-out of the inefficient—there seems to be every effort to hold proved and capable crews. This is sensibly put by one executive who writes, 'Highly skilled and trained employees simply cannot be laid off and re-employed at will. Am holding them, trusting for a revival.'

"Wage reductions, apparently, have been made reluctantly, if at all. Competition outside the state has been the chief cause, although decreased cost of living has also been a factor. Employers of women cannot make wage reductions because of state minimum wage orders. Many plants are reducing only in the case of new employees."

Examples of the data secured in some of the more important industries of the state follow:

Two Rail Extensions Planned in Southern California

Some of the richest agricultural land in Southern California will be given direct rail connections for disposing of its products as the result of two proposed extensions of the Los Angeles and Salt Lake Railroad. Applications have been made to the Interstate Commerce Commission and turned over to the State Railroad Commission for initial approval. The extensions are from Whittier to Santa Ana, a distance of 14 miles, and from Whittier to Tustin, 22 miles, both in Orange county. The estimated cost of the two roads is between \$1,500,000 and \$2,000,000.

Canning and Packing:

SALES are favorable with more than half of those reporting, and 86 per cent is the lowest percentage given, although many plants have closed or been consolidated. OUTPUT ranges from 1/3 to full capacity and averages 70 per cent. WORKERS are employed almost as numerous as in a normal year, the average being 80 per cent. WAGE REDUCTIONS of 10 per cent to 25 per cent have been made in almost every plant, with overtime and bonus payments eliminated. WAGE SCALES vary from 35 cents to 40 cents straight time for common labor and 60 cents to machinists.

Cement, Lime and Plaster:

SALES off 50 per cent, OUTPUT 25 per cent to 33 1/3 per cent of capacity (seriously affected by recent industrial differences). EMPLOYEES reduced in number and 7 1/2 per cent in wages. WAGE SCALES QUOTED: Common labor, 40 cents, 10 hours; mechanics, 60 cents to 80 cents, 10 hours.

Foundries:

SALES are uniformly below normal, ranging from 25 per cent to 90 per cent with the bulk of the business around the 50 per cent mark. OUTPUT is equally spotty, ranging from 20 per cent to 70 per cent with an average of 43 per cent of capacity. WORKERS employed number about one-half those in a normal year. WAGE REDUCTIONS of from 7 1/2 per cent to 15 per cent have been made, most of them being 10 per cent. WAGE SCALES GIVEN: Moulders \$7.12 to \$6.50; mechanics \$6.96 to \$5.75; specialists \$5.60 to \$4.72; common labor \$4.50 to \$3.50.

Lumber Millwork and Boxes:

SALES run from zero to 100 per cent among the large number reporting. A fair average would be about 65 per cent of normal. The recent building tieup in Northern California has affected this industry adversely. OUTPUT averages fair, a composite of all reports showing almost 70 per cent. WORKERS EMPLOYED are equal numerically in several instances to normal crews, the average being 73 per cent. WAGE REDUCTIONS have been made almost without exception, or are contemplated. The reductions have been various, running from 7 1/2 per cent to 20 per cent, with 10 per cent more to come off soon. WAGE SCALES reported are: Machine operators and bench hands \$7.40, \$5.00 to \$7.00, \$7.35; mechanics \$6.50 to \$7.00; cabinet men \$5.00-\$6.00; lumber handlers \$3.40 to \$3.60; timber fallers 50 cents, buckers 45 cents, engineers 50 cents, mill hands 40 cents; common labor receives from \$2.65 to \$4.50.

Machinery:

SALES show an average 50 per cent of normal, with one peak of 75 per cent and lowest 25 per cent. OUTPUT ranges from 75 per cent to 15 per cent of capacity, with an average of 45 per cent. WORKERS employed number only 57 per cent of a normal year, only one reporting plant employing 90 per cent, and another stating workers' efficiency has declined 40 per cent. WAGE REDUCTIONS have been universal, or are contemplated. They range from 5 cents per hour to 10 per cent, and bitter complaints are made of the difference between wage scales in the East and our own. WAGE SCALES QUOTED: Machinists 60 cents to 85 cents, moulders 65 cents to 85 cents, machine operators 60 cents, toolmakers 85 cents up, helpers 45 cents to 65 cents, welders 75 cents, apprentices 30 cents, common labor \$3.20 to \$4.00.

Carriers Plan Perfect Package Campaign Next Month

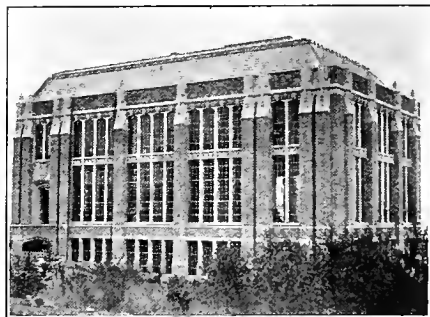
All trades and industries have been asked to participate in the "Perfect Package Movement" to be inaugurated by the railroads, steamship lines and express companies of the United States and Canada during November. The purpose of the movement is to stimulate public interest in the proper packing of shipments and to enable the carriers to improve the transportation service of the country. Reports on faulty shipments from each city and town in the country during the month will be kept and a table of percentages published.

Mining Laboratory Dedicated

Recent Acquisition of Washington University is Seventh on Program

The University of Washington's new mining laboratory which will be used jointly by the State School of Mines and the Northwest Experiment Station of the United States Bureau of Mines has been completed and formally dedicated. It comprises the fourth building on the university campus to be devoted entirely to mining and the seventh of the institution's new building program.

Research in the new laboratory is to be devoted mainly towards coal mining and ceramics with plans calling for the study of electro-metallurgy in the fu-



New laboratory of the University of Washington School of Mines, recently completed at a cost of \$120,000 and to be used partly for electro-metallurgical research.

ture, with a view of aiding in the development of the state's hydroelectric power and vast mineral resources.

The laboratory cost \$129,000, is four stories high and is built of reinforced concrete, terra cotta and brick.

Pacific Coast Division, N. E. L. A. to Convene in April 1922

The 1922 convention of the Pacific Coast Division, N. E. L. A., will be held in Riverside, Calif., in April of next year as the result of action taken by the executive committee of the association at a meeting in Los Angeles on September 15. The early action was taken to avoid any conflict with other meetings of the electrical industry.

President A. B. West reported that there was no objection on the part of the National Association to the election of jobbers or contractor-dealers as members of the executive committee of any division, and that employees of municipal plants might be elected to associate membership provided they were approved by the executive committee. It was the opinion of the committee that a flat membership rate of \$10 for jobbers should be placed in effect.

Reports from the committees appointed at the last convention all show active work of the year to be under way. Budget requests were approved with the understanding that a new policy of committee expenditures will be adhered to. In the future member companies will pay the living expenses of their representatives while away on association work and only the railroad and pullman fares will be charged to the various budgets. This will make it possible for a more active participation in committee work without increasing the expense of the association.

California Manufactures Show Huge Growth

California stands fifth in the number of manufacturing industries and eighth in the value of manufactured products of all the states in the Union, according to figures just given out by the United States Bureau of the Census for the year 1919. In that year California produced manufactured goods valued at \$1,981,443,000, an increase of 178 per cent over 1914. Other striking figures in the census of manufacturers in California are as follows: (1) The number of manufacturing establishments increased 18.8 per cent; (2) The number of wage earners increased 74.8 per cent; (3) Primary horsepower increased from 491,025 in 1914 to 768,558 in 1919, or 56.6 per cent; (4) Capital invested increased 81.1 per cent or from \$736,105,000 to \$1,333,382,000; (5) Payrolls increased 169.9 per cent or from \$140,843,000 to \$380,135,000.

California Commission to Hear Power Company Rate Cases

Hearings to establish a basis for rate adjustments of the principal electric power companies in California have been scheduled in San Francisco by the State Railroad Commission for the three months beginning October 25, with Commissioner Chester H. Rowell presiding. The companies affected are the Pacific Gas and Electric Company, the Great Western Power Company and the San Joaquin Light and Power Corporation.

This will be the first time that a complete survey of these companies will have been made, a definite rate basis established and a reasonable rate of return decided upon. The action of the commission follows applications made a year ago by the companies for increase in rates and surcharges. At that time a 15 per cent surcharge was granted which has since been decreased to 6 per cent. In the meantime engineers of the commission and representatives of the cities affected have been checking the valuations of the companies.

Included in the hearings will be the complaints of the cities of Grass Valley, San Francisco, Sacramento and Oakland, all of which are asking for a reduction of rates. The Pacific Gas and Electric Company will be the first to be considered by the commission.

The Northwest Electrical Service League has adopted a standard plan for wiring a five-room house and garage which is being sent out to all persons to whom building permits have been issued. Building contractors, wiremen and architects have also been supplied with the plans.

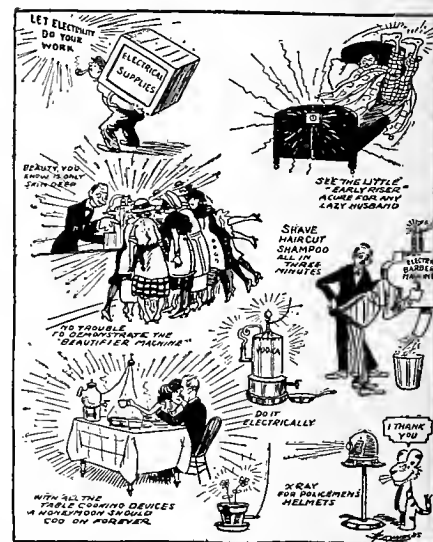
The Southern California Edison Company has filed on the Boulder Canyon site in the Colorado River, according to advices received from Washington on October 14. According to the report from the Federal Water Power Commission, this new site adds a million potential horsepower to the development already contemplated by the company. The sites on which filings have been made include Boulder Canyon, Pyramid Canyon, Glen River Canyon, Marble Canyon and two other sites between Marble Canyon and the latest site filed upon. The aggregate potential power of all of these sites is estimated at 3,400,000 horsepower.

Tacoma Exposition Successful

Electrical Show Demonstrates Advantages of Appliances and Conveniences

Unqualified success marked the outcome of the Electrical Exposition held in Tacoma, Washington, September 28, 29, 30 and October 1, under the auspices of the Northwest Electrical Service League and Tacoma interests. It is estimated that forty per cent of Tacoma's population visited the displays during the four days.

The exhibits which were placed in the new city light department warehouse, covered displays of industrial electrical equipment, scientific apparatus, commercial equipment and household ap-



Tacoma newspapers aided in making the Tacoma Electrical Exposition a success in many ways. The above cartoon by Reynolds is reproduced from one paper.

pliances. The biggest feature of the show was the giant electrical mountain locomotive furnished by the Chicago, Milwaukee and St. Paul Railroad.

Large manufacturers cooperated with local dealers and jobbers in making the exhibits as interesting as possible to the public. Charts and diagrams were used to demonstrate the construction of motors and generators and for educating the spectators in the increasing use of electrical equipment. Domestic "electrical servants" were one of the biggest features. Skilled cooks prepared meals on electric ranges in one room while in others demonstrators were kept constantly busy explaining the various advantages in "doing it electrically."

Considerable comment, all of which was favorable, was aroused in the press of the entire Northwest concerning the exhibition, which will be the foundation for Tacoma's participation in the Portland Exposition in 1925.

A force of a dozen engineers has been placed in the field by the Division of Engineering and Irrigation of the California State Department of Public Works for the purpose of making a complete survey of the water resources of the state. The sum of \$200,000 was appropriated by the state legislature for the survey.

Would Erect Office Building

San Francisco Electrical Development League Hears Plans for Big Structure

Tentative plans for an "Engineering and Industry" building to be erected in San Francisco at a minimum cost of \$2,000,000 and to be financed entirely by men in the industry were presented to the San Francisco Electrical Development League on October 10 by a committee headed by Robert Sibley, editor of the Journal of Electricity and Western Industry.

The committee reported that the structure, which would be at least twenty-five stories in height and located in the heart of the San Francisco business district, would be owned and operated in a democratic manner, being financed by between 1000 and 2000 personal subscriptions of \$200 each. Under the present plans the building would house all organizations engaged in the upbuilding of engineering and industry in the San Francisco bay region. Reservations for office space in the structure would be disposed of in the order of application. It is believed that the building could be ready for occupancy by January, 1924.

The arrangements for the control, financing and construction of the building would be placed in the hands of a board of regents selected from among the foremost men in the industry. The Electrical Development League placed at the disposal of the board of regents \$150 which is to be used to forward the initial organization of that body. The following have been suggested to comprise this board:

Members at Large

John A. Britton, vice-president and general manager, Pacific Gas & Electric Company.
W. E. Creed, president, Pacific Gas & Electric Company.
Mortimer Fleishacker, president, Great Western Power Company.

Advisory Committee

C. L. Chamblin, president, San Francisco Electrical Development League.
J. E. Woodbridge, president, San Francisco Engineers' Club.
J. D. McDonough, president, California Development Association of Agriculture and Industry.
B. M. Rastall, Industrial Department, S. F. Chamber of Commerce.
C. D. Marx, president, Joint Engineering Council of San Francisco.
E. C. Hutchinson, chairman, San Francisco Section, American Society Mechanical Engineers.

Commission to Adjust Various Colorado Claims

Engineer States That Body Is Almost Ready to Hear Proposals of States For Power and Water Rights On River

"The Colorado River Commission created by the League of the Southwest is collecting the physical data relative to the available water supply and irrigable areas in the Colorado River Basin to be used in the adjustment of the claims of the various states for power and irrigation," according to a letter just received from Addison J. McCune, state engineer of Colorado and chairman of the Colorado River Commission.

It is planned to submit the findings of the Colorado River Commission to a treaty or compact commission to which the five interested states have already appointed delegates and which will be complete when President Harding appoints a member to represent the federal government. The Colorado River commission is to be continued in the capacity of consulting engineers for the compact commission.

These commissions are expected to simplify procedure in bringing together all the interests involved so that development may proceed without unnecessary delay and litigation. "The U. S. Reclamation Service," Mr. McCune states, "has already collected sufficient information relative to the water supply of the basin to show that there is

enough water for the irrigation needs of the whole basin if properly handled. Consequently irrigation development in any particular territory need not be halted to any appreciable extent.

"The power problem is somewhat different. We assume that irrigation should take precedent over power since, taking the basin as a whole, much of the territory will be without a market for power unless there is irrigation development. But large power units cannot be developed without great storage basins. In most cases it is hoped these can be planned so as to be utilized both for power and irrigation, and in such cases both interests can share in the cost of construction and maintenance. Some delicate problems may arise in this connection which will have to be ironed out and on which the commission should be able to give material aid.

"Looking to the operation of this basin as a whole, the configuration of the country is such that the various irrigation units can be operated independently and should by all means be so operated, but we can conceive of a time when the water power of the basin may give the best service by being tied together and operated as a unit."

W. P. L'Hommedieu, chairman, San Francisco Section, American Institute Electrical Engineers.

F. L. Sizer, San Francisco Section, American Institute Mining and Metallurgical Engineers.

Bryant S. Drake, American Chemical Society.
F. R. Muhs, American Society Civil Engineers.
Chester Brown, San Francisco Chapter Association of Engineers.

J. R. Millar, president, California Manufacturers' Association.

Earl Brown, president, Cal. Ass'n Electrical Contractors & Dealers.

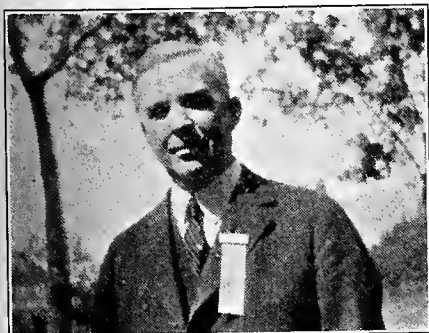
C. E. Grunsky, past president, Commercial Club.
Harry Bostwick, president, Pacific Coast Gas Association.

Robert Sibley (ex officio), editor, Journal of Electricity and Western Industry.

The headquarters of the California Electrical Cooperative Campaign have been moved from the Pacific Building to the Rialto Building in San Francisco. R. L. Eltringham, manager of the campaign, suggests that men of the industry make the new offices their headquarters when visiting in San Francisco.

One hundred and seventy-five emissaries of the San Francisco Chamber of Commerce left recently for the Orient on the steamer Empire State for the purpose of promoting closer relationship between San Francisco and the merchants of the Far East. Government, municipal officials and business leaders in each country will be interviewed. A survey of natural resources will be made and trade activities and possibilities studied. The tour marks the first time that a civic organization has attempted this direct method of approaching the larger problems of international trade.

Hat Creek Power House No. 2, a part of the Pit River development of the Pacific Gas & Electric Company in Shasta county, California, was placed in operation October 1, just a month following the opening of No. 1 power plant. The two plants are almost identical and develop 12,500 kw. each.



Ben F. Read, president of the Mountain States Telephone Company, who gave the convention visitors a powerful message in his speech on the strides which are being made in the Rocky Mountain District.



Officers of the Rocky Mountain Division and the Colorado Electric Railway, Light and Power Association: (left to right) E. P. Bacon, Fred Norcross, E. A. Phinney, T. C. Kennedy, A. C. Cornell, Arthur Prager and D. C. McClure.



M. R. Bump, national president of the N. E. L. A., who was forced to leave the Rocky Mountain Division convention to attend the Great Lakes Convention a few days later. Mr. Bump was one of the principal speakers.

CONVENTION FIGURES AT GLENWOOD SPRINGS, COLO.

California Cooperative Campaign Selects New Chairman

Reorganization of the California Electrical Cooperative Campaign from the chairman of the advisory committee down has resulted from the resignation from the chairmanship by L. M. Newbert, Oakland district manager of the Pacific Gas & Electric Company. A. W. Childs, superintendent of sales for the Southern California Edison Company, has been unanimously chosen as the new chairman.

Following the announcement of the resignation of Mr. Newbert, A. G. Wishon, former member of the committee and general manager of the San Joaquin Light and Power Corporation, was chosen for the position of chairman, but had resigned before being notified. Mr. Childs's appointment followed the receipt of Mr. Wishon's resignation.

Other changes in the committee include the appointment of J. B. Black, sales manager of the Great Western Power Company, to succeed Mr. Wishon and the appointment of George Bigelow of the Southern Sierras Power Company as a fourth central station member of the committee.

New Big Creek Plant Authorized by Railroad Commission

Authority to proceed with the construction of an additional unit in its Big Creek hydroelectric development project has been given the Southern California Edison Company by the State Railroad Commission. The new plant will bring in 50,000 kilowatts by 1923 and the work which is to be done be-

tween now and then calls for the expenditure of \$11,500,000. The present plans call for the construction of a dam across the San Joaquin River just below Big Creek. The water thus impounded will be carried through a tunnel five and three-quarter miles long to the power plant.

Increasing demand for hydroelectric power in the West is indicated by figures presented by the company. In 1913 the output of power from the system was 600,000 kilowatt hours while at the present time 1,000,000 kilowatt hours are being developed. The anticipated demand for 1923 is placed at 1,300,000 by the company.

Industrial Illumination to be Promoted in Vancouver

Industrial illumination will be immediately promoted by the British Columbia Electrical Cooperative Association of Vancouver by a special committee appointed recently. It is planned to install an industrial lighting exhibit in the Electric Building in the near future to be followed by a vigorous campaign by wholesalers acting in conjunction with local contractors. Lecture classes in the elements of industrial lighting will also be held. The committee in charge of this new field includes G. N. Gardner, Canadian Westinghouse Company, chairman; James Lightbody, B. C. Electric Railway Company; W. C. Mainwaring, Northern Electric Company; F. E. Carew, Canadian General Electric Company; W. J. Tulk, B. C. Electric Railway Company; R. E. Chatfield, secretary-manager, B. C. Electrical Cooperative Association; and J. Muirhead, provincial inspector of electric energy.

San Joaquin Company Exhibits in Fresno County Fair

The real story of hydroelectric development in California was exemplified by the San Joaquin Light and Power Corporation at the recent Fresno County Fair when the company displayed a huge airplane map of the coast line of the state from Cape Flattery to the Mexican border with power lines and hydroelectric plants marked. The highly colored picture gave a comprehensive idea of the location of the prin-

cipal cities, railroads and highways together with the entire network of the lines of the San Joaquin company and the Midland Counties Public Service Corporation, a subsidiary of the former company. Power lines were shown in red with each power house blocked out in its relative location. The booth in which the picture was displayed was attractively decorated and a unique lighting scheme was devised for best showing off the picture-map. Consumers and prospective investors by the thousands visited the booth.



The booth of the San Joaquin Light and Power Corporation at the Fresno County Fair in California, showing the huge airplane picture map on which the power developments of the company were shown.

Northwest Association Chooses Technical Committees

The executive committee of the Technical Section of the Northwest Electric Light and Power Association, of which R. M. Boykin of the North Coast Power Co., Portland, is chairman, met recently to select the personnel of the various committees of the Technical Section for recommendation for appointment by President Putnam. Plans for the ensuing year's work of the committee, which will be very active, were also discussed. The most important question to be taken up and the one which will attract the most attention from the Technical Section is the matter of formulating a standard line extension policy for suggested adoption by the utilities of this section.

Chairmen of the various committees of the Technical Section were suggested for appointment as follows:

Overhead Systems Committee, R. M. Boykin, North Coast Power Co., Portland; Safety Rules Committee, H. H. Schofield, Pacific Power & Light Co., Portland; Electrical Apparatus Committee, G. E. Quinan, Puget Sound Power & Light Co., Seattle; Hydraulic Power Committee, J. B. Fisk, Washington Water Power Co., Spokane; Underground Committee, H. R. Wakeman, Portland Railway Light & Power Co., Portland; Prime Movers Committee, O. L. LeFever, Northwestern Electric Co., Portland; Meters Committee, R. E. Thatcher, Puget Sound Power & Light Co., Seattle; Inductive Interference Committee, F. D. Nims, Washington Coast Utilities, Seattle.

Books and Bulletins

The Induction Motor and Other Alternating Current Motors

By B. A. BEHREND. Second edition, revised and enlarged. 272 pages, 6 by 9, 212 illustrations. Published by McGraw Hill Book Co., Inc., New York.

The book is the gist of the experience of an engineer who has been actively associated with electrical engineering through almost three decades, and who has had a part in the development of the machines about which he writes. It discusses the theory and principles of design of the induction motor and other alternating current motors.

C. P. Bowie is the author of a booklet published by the Bureau of Mines, entitled *Oil Camp Sanitation*. Although ostensibly written to be helpful to those engaged in coping with conditions found in "mushroom" oil towns, the treatise is a well illustrated and exhaustive study applicable to sanitary problems found in all places of temporary habitation such as construction and mining camps, or fruit districts during the harvest season.

CORRECTION TO STUDY COURSE, PAGE 311

Omission of the red imprint on some of the copies of the Journal of Electricity and Western Industry of this issue, makes necessary a correction to the illustrations on page 311, which should be noted. Under column 3 of the second illustration, "Condensed Summary of Operations," where a blank now appears against net profit of the store operations for February, \$50.34 should be inserted in red and below in the tabulation representing the distribution of each dollar received from sales, against the same item should be written \$.0290 in red.

Meetings of Interest to Western Men

Washington Contractor-Dealers
Secede From National Body

Decision was reached at the annual convention of the Washington Association of Electrical Contractor-Dealers, held in Yakima, Washington, September 16, to follow the action of the California and Oregon Associations in withdrawing from the National Association of Electrical Contractors and Dealers. Similar action was taken at the Oregon state convention held June 12 and 13 at Eugene and at the California annual meeting held at Berkeley, August 27. A joint letter to the National Association giving notice of withdrawal was signed by the presidents of the three associations at the Yakima meeting. This action follows failure to come to an agreement over the appointment of a Pacific Coast field representative, the western associations feeling that they could not support such an institution at the present time, and as their alternative proposition was not acceptable to the national body, they have withdrawn in order to establish an organization which they feel will bring the West closer together.

The following officers were elected for the coming year: President, A. J. Gladson; vice-presidents: Seattle district, J. J. Agutter, V. S. McKenney and W. M. Meacham; Yakima district, R. B. Wiseman and Frank E. Smallidge; Spokane district, H. L. Tinling; Bellingham district, A. S. Clark; Tacoma district, David T. Dickson.

Cooperative Campaign Fosters
San Jose Mass Meeting

Plans for a public mass meeting in San Jose when people of the Santa Clara Valley will listen to the story of hydroelectric development in the West were evolved at a meeting of men of the electrical industry held in that city on October 6, under the auspices of the California Cooperative Campaign. Fred Doerr, chairman of the Santa Clara Valley electrical dealers' organization, presided over the gathering of power company men, manufacturers' representatives, jobbers, contractors and dealers who attended. Among the speakers of the evening were Robert Eltringham, manager of the campaign, C. L. Chamblin, president of the San Francisco Electrical Development League, who urged the formation of such an organization in San Jose, John Kuster, district manager of the Pacific Gas and Electric Company, Earl Browne, president of the California Contractor-Dealers' Association, and Albert Elliot, San Francisco attorney.

The Southern District Contractor-Dealer Association will hold its October meeting on the 22nd at San Diego as a joint meeting with the Electric Club at which time the campaign will be launched to assist the power company in a local drive to sell its securities. San Diego is growing at such a rapid pace that a large program of betterments by the Company is necessary to supply the demands for service.

Municipalities League Favors
State Power Development

Resolutions favoring the immediate creation of a state board of water and power commissioners to direct the expenditure of a total of \$500,000,000 of state funds in developing the water resources of California were passed at the twenty-third annual convention of the California League of Municipalities held in Santa Monica September 27-30. A state amendment covering every phase of the proposed plan was drawn up by the special committee charged with this duty and the report overwhelmingly adopted at the close of two half-days of debates and arguments.

Eighty-eight official delegates from the various cities of the state together with a like number representing the legal and health departments of the cities took part in the sessions.

Gifford Pinchot, former head of the United States Forest Service, during the course of an address before the convention charged that "private operation of power plants in this state has been a glaring failure." Mayor Louis Bartlett of Berkeley and City Manager Koiner of Pasadena both presented lengthy arguments favoring state and municipal ownership and development of all utilities. All discussions urged state development of all water and power projects as well as the control through the ballot by the people of all future developments.

Delegates to the convention were conducted on a tour of the various hydroelectric developments being undertaken by the city of Los Angeles.

The convention was held in the new \$375,000 municipal auditorium recently completed by the city of Santa Monica.

The keynote of the aims of all western electrical cooperative campaigns and similar activities was sounded at a meeting of men of the industry held on September 9 in Seattle when R. W. Clark, chairman of the advisory committee of the Northwest Electrical Service League said: "There are innumerable types of cooperation, ranging from that restrictive association which functions to exclude from legitimate competition those outside the organization to the cooperative group which seeks to place the average standards of its industry or profession on a higher ethical plane, to give more complete satisfaction to the consuming public, and therefore to increase the scope and service of the industry. We of the electrical and allied industries are ready to build a bigger and better service organization."

Gas Association Endorses 1925
Exposition in Portland

Endorsement of the 1925 World's Exposition to be held in Portland together with the choice of that city for its convention during that time was effected at the twenty-eighth annual convention of the Pacific Coast Gas Association held in Del Monte recently. The resolution passed by the convention follows:

Whereas, The city of Portland in the state of Oregon, has announced a World's Exposition, to be held in Portland, Oregon, in 1925, as a memorial to mark the return of peace, in commemoration of the completion of the Atlantic-Pacific transcontinental highways and to set forth the development in the art of electricity and the development of our electrical resources; and

Whereas, We are requested and invited to endorse the action of the state of Oregon; and

Whereas, We are heartily and cordially invited by Mr. Guy W. Talbot, a director of the World's Exposition and president of the Portland Gas and Coke Company and Pacific Power and Light Company of Portland, Oregon, to hold our annual meeting of that year in that city; and

Whereas, Such great achievement as the building of the transcontinental highways and the development of our sister industry, electricity, is worthy of our endorsement,

Now, therefore, Be It Resolved, That the Pacific Coast Gas Association in annual convention assembled does hereby fully endorse the World's Exposition in Portland, Oregon, in the year 1925, and does recommend that the Association hold its 1925 Convention in the city of Portland.

Pacific Coast Division, N. E. L. A.
Proposes to Change Name

Consideration of changing the name of the Pacific Coast Geographic Division of the National Electric Light Association to the Pacific Coast Electrical Association, will be the chief feature of a general meeting of that body to be held at the Hotel Del Monte, Del Monte, California, on November 11. The meeting was called in conformance with a resolution passed by the executive committee in Los Angeles on September 16. The meeting will be held in conjunction with the regular quarterly session of the Pacific Coast Division, Electrical Supply Jobbers' Association, which convenes November 10, 11 and 12.

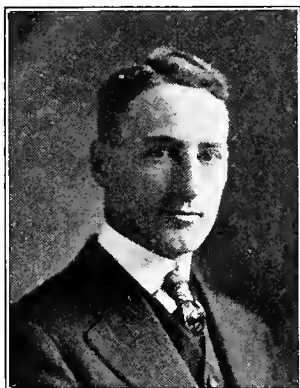
That the effect of the coming Conference on the Limitation of Armaments will revive the business and foreign trade of America is the hope of the San Francisco Chamber of Commerce, which has passed the following resolution:

"That this Chamber of Commerce attributes the decline of our foreign trade and the reduced domestic consumption of manufactures and luxuries to excessive taxation and to the exhaustion of capital and credit. It places hope of a substantial and world-wide recovery upon the success of the Conference for the Limitation of Armaments and urges the administration to use every effort to bring about a drastic reduction of naval and military expenditure so that all countries and all classes may be relieved of a staggering burden which threatens some with insolvency and confiscation and all with trade stagnation and unemployment."

COMING EVENTS

- PACIFIC COAST DIVISION, N. E. L. A., GENERAL MEETING
Del Monte, Cal., November 11, 1921
- PACIFIC COAST DIVISION, ELECTRICAL SUPPLY JOBBERS' ASSOCIATION, QUARTERLY SESSION
Del Monte, Cal., November 10, 11 and 12, 1921
- PACIFIC COAST DIVISION, N. E. L. A., ANNUAL CONVENTION
Riverside, Cal.—April, 1922

T. O. Kennedy, general superintendent of the Denver Gas and Electric Light Company, is the new president of the Rocky Mountain Division of the N. E. L. A. The electrical industry has few activities in Colorado in which Mr. Kennedy is not a participant. Mr. Kennedy's friends claim that it was he who saw the big possibilities of cooperative development within the electrical industry in Denver, with the result that the Electrical Cooperative Campaign was launched and Mr. Kennedy elected



T. O. KENNEDY

chairman of the advisory committee. He received his education in the University of Missouri and started as a junior engineer with the Denver Gas and Electric Light Company in 1907. Subsequently he was superintendent of various Doherty companies throughout the Middle West, until he came to Denver in 1907. He is past chairman of the Electrical Bureau of the Denver Civic and Commercial Association, a member of the Denver Athletic Club, the Denver Motor Club, the Rotary Club, and the Optimists Club, not to mention that he is active in the affairs of the Doherty Men's Fraternity, the A. I. E. E., the American Gas Association and the N. E. L. A.

Herbert Hoover, Secretary of Commerce and well known engineer of the West, has purchased a large ranch near Bakersfield, Cal., and recently had the installation of his electrical pumping plant approved by one company and turned down by another. This action is quite indicative of the lack of harmony in design of motor installations in pumping plants and emphasizes the necessity of standardization of electrical pumping installation now undertaken by the California Association of Electrical Contractors and Dealers in co-operation with the engineering committee of Pacific Coast Division N. E. L. A.

W. H. Brackenridge, senior vice-president of the Southern California Edison Company, is spending some weeks visiting eastern business centers.

N. E. Brown, assistant general manager of the San Diego Electric Company, together with Read G. Dilworth, general counsel for the company, and E. J. Burns, general auditor, were in San Francisco recently attending the rate hearings before the California Railroad Commission.

Personals

Albert H. Elliot, a San Francisco attorney well known to the electrical industry throughout the West, was the leading attorney before the Supreme Court of California who recently proved invalid the Alien Poll Tax Act, passed in the November elections last fall. He proved that the Act was not only in conflict with the treaty between the United States and Japan, but that it was void as being unconstitutional under the Fourteenth Amendment to the Constitution of the United States.

C. E. Drayer of Chicago, national secretary of the American Association of Engineers, is visiting the various chapters of the association in the West, on his annual tour of inspection. Mr. Drayer is greatly impressed by the co-operation and enterprise of the men who are making engineering history west of the Rocky Mountains. He is addressing groups of engineers in each city that he visits on problems vital to the profession.

H. Foster Bain, Director of the Bureau of Mines, Washington, D. C., and a charter member of the San Francisco Engineers' Club, addressed members of the club recently on "The Relation of the Bureau of Mines to the Oil Industry." Mr. Bain is in the West on a tour of inspection.

W. M. White, hydraulic engineer for the Allis-Chalmers Co., and designer of the water wheels for the Caribou Plant of the Great Western Power Co., is now in Japan where he is making an investigation of the interesting hydroelectric situation in Japan's new power development program.

E. P. Bacon of the Natrona Power Company, Casper, Wyoming, and E. N. Crowley of the Wyoming Utilities Commission, represented the Wyoming electrical interests at the recent convention of the Rocky Mountain Division, N. E. L. A., at Glenwood Springs, Colo.

W. D. Shannon of Stone & Webster, is now general superintendent in charge of the construction of the masonry dam that is being constructed for the Snow Mountain Water and Power Company. It will be remembered that he held the same post on the Caribou development of the Great Western Power Company.

J. R. Geary, general manager for the General Electric Company in Japan and well known in Pacific Coast circles, was recently the guest of honor at a dinner given by the Japanese Prime Minister in Tokyo in recognition of Mr. Geary's active work in the furtherance of peaceful relations between Japan and the United States.

C. M. Masson, illuminating engineer of the Southern California Edison Company, has been in attendance at the annual convention of the Illuminating Engineering Society at Rochester, N. Y. While in the East, Mr. Masson is making a study of the latest developments of illumination which will be of application in the West.

H. R. Wakeman, Portland Railway Light & Power Company, and O. L. LeFever, Northwestern Electric Company, Portland, attended the group meeting of the Technical Committees of the N. E. L. A. held at Salt Lake City recently, the latter presiding at the meeting of the Prime Movers Committee in the absence of Chairman H. P. Liversidge, of Philadelphia.

W. J. Barker, general manager of the Denver Gas and Electric Light Company, is president of the Electrical Home Building Company, the corporation which was formed for the construction of Denver's first electrical home. The vice-presidents are H. D. Randall, district manager of the General Electric Company, and L. M. Cargo, manager of the Westinghouse Electric and Manufacturing Company in Denver.

Harry B. Thayer, president of the American Telephone and Telegraph Company, accompanied by Walter S. Gifford, vice-president of the company, was a recent San Francisco visitor. The two officials are making an inspection of the company's holdings on the Pacific Coast. Mr. Thayer stated that telephone service in San Francisco was as good, if not better, than that in any city in the country.

Henry Bostwick, manager of the San Francisco district of the Pacific Gas & Electric Company, has been elected president of the Pacific Coast Gas Association. Mr. Bostwick will give to this association an unusual background of earnest effort in the upbuilding of industry in the West. For many years he has acted as secretary of the association and under the able tutelage of John A. Britton, one of the founders of the association, has long since been recognized as a leader in progressive



HENRY BOSTWICK

thought. His joint activities with the electrical interests of his company will also combine to give a helpful influence in the harmonious development of Gas Association activities. Mr. Bostwick is a prominent member of the Rotary Club of San Francisco, he has served as president of the San Francisco Electrical Development League, and is actively engaged in many other affairs devoted to the upbuilding of the industrial and electrical West.

J. B. Growden, recently elected chairman of the Seattle Section, A. I. E. E., is planning a big program for the Washington engineers during the coming season. Mr. Growden at the present time is electrical engineer for the City of Seattle engaged on the Skagit River power development project under the direct supervision of C. F. Ulden, chief engineer of the project. He received his engineering education at the University of Nebraska and for five years was associated with the Wash-



J. B. GROWDEN

ington Water Power Company of Spokane. Later he held the post of superintendent of construction with both the Portland Railway, Light and Power Company and the Pacific Power and Light Company. At the outbreak of the war he enlisted in the Fourth Army Engineers, was commissioned a captain and sent overseas. He is the possessor of a most distinguished war record, being decorated for bravery in action with both the Croix de Guerre and the D. S. C. At the time of his discharge he held the commission of major.

S. W. Bishop, executive manager of the Electrical Development League of Denver, is making a strong plea for the work of the electrical trade journal in putting over the cooperative idea by emphasizing the activity of the league in subscribing for and urging the membership to read the trade press. Among the outstanding electrical papers mentioned is the Journal of Electricity and Western Industry.

Frank R. Devlin, ex-president of the California Railroad Commission, has contributed a noteworthy article to the current issue of the Mining and Oil Bulletin in which he discusses "California's Attitude Towards Hydroelectric Development Programs." Although Mr. Devlin's training has been political, nowhere in his article does he suggest that the state or its subdivisions embark in the hydroelectric business in competition with and to the discouragement of private capital.

Sir Howard Wilcox, noted British construction engineer who is responsible for the vast Nile irrigation project in Egypt, has announced that he will inspect the Columbia River Basin project in Washington in the near future.

Ralph Modjeska, noted Chicago construction engineer, who with Vipond Davies, made a recent survey for a bridge across San Francisco Bay, is again in the west in the interests of the project.

F. D. Weber, electrical engineer for the Oregon Insurance Rating Bureau, Portland, and vice-president of the Board of Engineering Examiners, was the Oregon representative at the meeting of the Council of State Boards of Engineering Examiners held in St. Louis on October 3.

Willis Booth, vice-president Guaranty Trust Company of New York City, is a recent Los Angeles and San Francisco visitor. It will be recalled that Mr. Booth was formerly one of the founders of the Hotpoint Company of Ontario. He has been attending the recent bankers' convention in Los Angeles, but was called to Berkeley to be at the bedside of his mother who passed away October 3, 1921.

A. B. West, vice-president of the Southern Sierras Light and Power Company and president of the Pacific Coast Division, N. E. L. A., has contributed a timely article to the September 3rd issue of the Magazine of Wall Street, entitled, "Give Us Power." In his article Mr. West explains the demands for development in the West and how his company is meeting some of them.

Dr. Thomas A. Addison, Pacific Coast manager of the General Electric Company, is now in New York City. He expects to sail for Europe on October 22d and will be absent from his western office for some months, during which time he will visit Italy, Greece, Egypt and other countries of Europe.

Arthur Prager of the Gas and Electric Company of Albuquerque, N. M., gave his ideas on power development in New Mexico at the Glenwood Springs convention of the Rocky Mountain Division of the N. E. L. A. recently.

Max H. Heusser, metallurgical engineer for Sulzer Bros., Diesel engine manufacturers of Winterthur, Switzerland, was in San Francisco recently inspecting the various industries of that city. Mr. Heusser is making an industrial inspection of the entire U. S.

S. M. Kennedy, vice-president in charge of Public Relations for the Southern California Edison Company, is visiting in New York, Boston and other eastern centers. He will return about the first of November.

H. R. Shrofe, sales manager for Haag Brothers Co. of Peoria, Ill., manufacturers of electric washing machines, is a recent San Francisco visitor.

Mark R. Colby, president of the Colby Steel and Engineering Company of Seattle, was a recent San Francisco visitor.

New Associate Editors on the Staff of the Journal of Electricity and Western Industry

Norman S. Gallison and George C. Tenney have been appointed associate editors on the editorial staff of the Journal of Electricity and Western Industry. In order to give the most helpful service to the industrial West, the Journal of Electricity and Western Industry is now adding to its staff these editors experienced particularly

Francisco. He will be responsible for the industrial news service in the Journal of Electricity and Western Industry. Norman S. Gallison, a graduate of the College of Commerce at the University of California, likewise with four years' newspaper experience, comes directly to the Journal of Electricity and Western Industry from the division of



N. S. GALLISON



G. C. TENNEY

in finance and industry. Mr. Tenney, a graduate of the University of California in Electrical Engineering, has had four years' experience in newspaper work, in which he was associated with the Sacramento Bee, the Associated Press, and the San Francisco Chronicle. He has also been in the employ of the Pacific Gas & Electric Company and the Meese, Gottfried Company of San

analysis and research of the Federal Reserve Bank of San Francisco, where he has, during the months just past, had charge of the gathering of industrial and statistical data concerning the West. He will be responsible for the financial and industrial matters appearing in the Journal of Electricity and Western Industry, in addition to his other editorial work.

Hughson & Merton of Los Angeles, Denver, San Francisco and Portland, are no longer handling the line of electric irons manufactured by the Chicago Flexible Shaft Company, according to an announcement from that company.

F. P. Spencer of Denver, Colo., has purchased the stock of the Clovis (N. M.) Electric Company. He will immediately replenish the stock of the store to include a full line of appliances, lamps, etc.

H. E. Bittmann, 408 Claus Spreckels Bldg., San Francisco, is now the representative of the Holtzer-Cabot Electric Co., specializing in hospital signaling systems, fire alarm systems, factory calling systems and other similar devices.

The Western Agencies Corporation of Seattle, manufacturers' agents for electrical appliances, recently moved from 923 Pine street to 623 Fourth avenue.

The Electrical Equipment Company, one of the largest auto-electric concerns in the Southwest, recently opened a new \$250,000 store, office building and shops at Phoenix, Arizona, said to be one of the most complete of its kind west of the Rocky Mountains. The building contains 11,000 sq. ft. of floor space of which 1000 ft. is devoted to an electric parts department. E. L. Gielow is president of the corporation.

G. O. Rolfe has opened a new electrical appliance store at Third and Salem streets, Chico, Cal.

L. V. Ingersoll of Otis McAllister & Company, San Francisco, left for Guatemala on October 8 where he will represent the company with a line of recently perfected electric coffee roasters.

R. C. Degner, of the Electric Service Garage, is negotiating for much larger quarters, as a result of the recent boost given to the electric trucking business. Since Mr. Degner took over the Harrison Electric Garage in the early summer, Jim Canovan of the Walker Electric Vehicle Company, and C. E. Poyer, representing Edison Storage Batteries, have combined with him, to stimulate interest in the electric truck as a money saver to the user and as a load stabilizer for power companies.

R. L. Eltringham, secretary-manager of the California Electrical Co-operative Campaign, has exemplified what a well written series of educational articles can do. He points out that \$4,000 spent in advertising has gotten into the daily press of the state something like \$30,000 worth of publicity through the appearance of the "Home Electrical" articles, which were written by Miss Gertrude Tucker of the Southern California Edison Company in Los Angeles, on the better uses of electricity in the home.

The F. A. Clarke Company recently opened a new electric appliance store in Pasadena, Calif., with a large line of labor saving and convenience devices which they are prepared to sell on the "Name your own terms" plan.

D. J. Butts, for the last two years a partner with Thomas Foulkes in the Foulkes Electric Shop, Los Angeles, has bought the full interest in the firm for himself. He will continue the business under the old name.

Manufacturer, Dealer, and Jobber Activities

General re-adjustment of prices of Mazda lamps was announced by the National Lamp Works of the General Electric Company, to be effective October 1st. The reduction affects the prices of Mazda C and Daylighting lamps.

With the resignation of Eugene Newnham as sales manager of the motor department of the Robbins & Myers Company, Springfield, Ohio, the following changes in the sales organization have been announced: W. W. Mumma, formerly sales manager of the fan department becomes general sales manager, with A. J. Reed assistant sales manager of the motor department and F. W. Burmeister, assistant sales manager of the fan department.

An improved line of "Red Spot" hangers for commercial lighting units have been issued by the F. W. Wakefield Brass Company, Vermilion, Ohio. Many new ideas are included in the new style hangers.

The Baby Grand Ironer, produced by the Grand Manufacturing Company of Detroit and distributed by The Electric Servant Company of the same city, is one of the newest additions to the home appliance line. The ironer, which can be placed on a table or carried from room to room, is driven by a small General Electric motor.

E. F. Conrad has been appointed factory western representative for the Square D Company of Detroit, Mich., and will establish his headquarters in San Francisco.

The J. A. Newton Electric Company and the Jewel Electric Company were both exhibitors in the September Trade Fair held in Glendale, Cal., by the merchants of that city. Every opportunity was sought to show the throngs what was really desirable in the electric appliance line. They sold the idea to the visitors that proper service for electrical goods can best be obtained by trading with contractor-dealers, thereby insuring high standard goods and a follow-up service that gives best results.

The Federal Electric Company of San Francisco has recently added a complete line of Epcos theatrical lighting equipment for distribution in Northern California. The line includes footlights, spotlights, color spots and trip lights.

Garnett Young of Garnett Young & Company, electrical manufacturers' agents of San Francisco, left recently for an extended tour of the east. He will visit the factories of several of the manufacturers which his company represents on the Pacific Coast.

The Edison Electric Appliance Company of Los Angeles has recently issued a small pamphlet which is designed to sell the value of 24-hours-a-day service of the central station to the consumer. The pamphlet is enclosed in every appliance that is sent out by the company so that the consumer opening the package gets the message on the value of central station service.

The Humphrey Engineering Construction Company of Los Angeles was awarded two ornamental street lighting contracts in the last few weeks. One installation in the Crescent Heights district calls for 360 single light standards with series circuits. The other contract calls for the city of Inglewood and amounted to \$10,799.

The electrical work on the new Logan Heights high school, San Diego, was awarded to the Southern Electric Company at a figure said to be around \$17,000. It is to be one of the most complete electrical installations to be made in California schools and the Southern Company deserves much of the credit for establishing such high standards in the Southwest.

M. W. Wheeler, western representative for Airway Electric Appliance Corporation, Toledo, manufacturers of Airway electric vacuum cleaners and washing machines, has removed from the Builders' Exchange Building to 373 Monadnock Building, San Francisco.

Milton Birnbaum has taken the position of secretary with the Federal Electric Company of San Francisco. Mr. Birnbaum was for five years with the Novelty Electric Sign Company and later with J. Charles Greene Company and Foster and Klieser, outdoor advertisers. Mr. Birnbaum was the designer of the monster "Wrigley" electric sign, one of the most pretentious on San Francisco's big White Way.



JUST BEFORE HOOKING ONE

S. B. Gregory, Pacific Coast representative for the Arrow Electric Company with offices in San Francisco, has just made a beautiful twenty-five yard cast with the fishing rod he holds in his hands. He is hoping to catch either a birdie or an esgle if there are such fish. Note the placid waters of Lake Bunker in the background. Judging from the smile on "Greg's" face, one might think that he has just made a "hole-in-one" from the second tee at the Claremont Country Club.

Business Outlook in Western Market Centers

Reflecting the Trend of Community Thought on Conditions and Events Affecting
Business and Industrial Activities Throughout the West

Compiled and edited for the Journal of Electricity and Western Industry by correspondents in all principal Western cities.

SAN FRANCISCO

The outlook for business is favorable, the impression being general that recovery from the depression of past months is in progress. Barring unforeseen contingencies, steady improvement is expected.

The employment situation is considerably improved, partly due to the fact that the building trades strike has been settled and that a large percentage of labor has returned to work. Some factories, noting a larger demand for their output, are increasing their forces. There is still a good deal of unemployment, however.

There is now considerable building activity. Material dealers have cooperated toward the lowering of prices, and, with the settlement of the strike, all unfinished jobs are again under way. The general opinion is that there will be a good deal of home building this winter.

LOS ANGELES

Business and crop conditions are fairly satisfactory, with prospects favorable. A significant factor is the growing demand for building sites, and new building continues upon a very large scale. Six representative department stores here report an increase of 4 per cent net in August sales over August, 1920, while in August this year sales were 29.3 per cent larger than in July.

The tonnage that entered Los Angeles harbor in August was 314,998 tons net, and 350,795 tons cleared this port. August exports totaled \$1,067,263, against \$432,503 in August, 1920, imports were \$1,114,615, against \$448,991 for August last year.

State and National banks report a combined increase of \$28,773,961 in deposits and an expansion in loans of \$33,361,711 in their report of September 6. The largest proportion of this is credited to the State banks, their deposits amounting to almost \$300,000,000.

SALT LAKE CITY

There are unmistakable signs of improvement in the general business situation in the intermountain section. Building permits in Salt Lake City for the month of September showed a gain of 320.7 per cent over the month of September, 1920. The permits totaled \$230,635 as compared with \$56,845 a year ago.

Reports from the silver and lead producers indicate that they are fairly busy, particularly in the mining of silver ore. The price of lead has advanced 30 points within the last thirty days.

Local bankers report that the demand for money has not diminished, and that stockmen are endeavoring to borrow money to enable them to hold their sheep and cattle for winter feeding.

Crops have been exceptionally good this year, and the unemployment situation has been relieved to a considerable extent due to seasonal industries such as sugar making and canning.

DENVER

Business in all lines is showing improvement. Evidence of this condition is revealed in the statement on state banks made public just recently by the state bank commissioner. This report shows that individual deposits in the state banks were \$44,146,133.36 on Sept. 6 compared with \$40,972,760.97 on June 30. At the same time loans and re-discounts showed a decrease of \$2,200,000.

Building is on the increase in Denver as is shown by a report just issued by the city building department. In the first nine months of 1921, the report shows that building permits were issued for a sum more than \$1,000,000 greater than for the same period in 1920. Indications are that the present year will eclipse any other twelve months for at least ten years in the building business here.

Coal mining in Colorado at this time is more nearly normal than it has been for some little time as people are again buying coal for domestic use. A slight increase is also reported in industrial consumption. Merchants in all lines of business are of the opinion that the worst of the depression is over and that conditions will continue to grow better.

SPOKANE

The month of September just passed exceeded any September in ten years in the number of permits issued for home building. The total construction will amount to approximately \$150,000 with \$23,000 added for additions, repairs and alterations to present buildings. The nearest approach was in 1912 when the new construction totaled approximately \$90,000 in value and work on old houses \$12,000.

Most lines are showing some degree of improvement with the exception of mining and allied business. While the farmers in this district do not find the process of liquidation an entirely pleasant one, conditions continue to show an improvement which first began to be marked some weeks ago. The lumber trade which has been stationary for months past is now improving. Cedar products are more in demand with a noticeable rise in prices. The price of the higher grades of fir lumber has

risen \$5 per thousand feet and lumbermen are inclined to be optimistic over the present market outlook. Improvement in the local building situation and in eastern centers, which absorb the bulk of the lath manufactured in this district, is reflected by an increased demand.

SEATTLE

No increase is reported in the volume of business transacted by local jobbers and dealers compared with last month. Stocks are reported ample, adequate by a considerable margin for the present demand; deliveries are easily obtainable and collections range from fair to good.

A majority of lumber mills in this section are operating steadily and present indications are that the tidewater mills, at least, will continue throughout the winter months. A recent stiffening in the price of certain grades of lumber, reduced water rates and like contributing factors have speeded up lumber production in the Puget Sound district. A majority of the logging camps in western Washington which have been closed down or running intermittently since early summer, are now operating with full crews.

A considerable amount of new construction is going on in Seattle, the major portion being confined to residence work and the smaller type of industrial and business buildings, although there is at present considerable projected construction which is being delayed awaiting the ability of owners to finance their undertakings.

PORTLAND

Indications of better times are evident in a general quickening in industrial lines. Building is steadily increasing, while an increase in bank clearings indicates better business conditions. The lumber industry is in better shape than it has been for nearly two years, exports are large and on the increase.

Slow but steady gains are reported in most retail lines. Country orders received by jobbers are in larger volume, and reports from the agricultural sections, particularly the grain growing districts, are more encouraging. Wheat money is beginning to circulate more extensively in the interior and is doing much to improve the financial situation there.

Builders' hardware, plumbing supplies and electrical wiring equipment are all experiencing considerable activity due to residence building work. Electrical jobbers report that orders are coming in for standard package quantities, which indicates a more active demand for goods, as well as a general feeling that prices are becoming more nearly stabilized.

Construction News and Industrial Developments

Suggesting to the Engineer, Contractor, Manufacturer, Dealer, Agent and
All Business Men Opportunities for New Business

THE PACIFIC NORTHWEST

SEATTLE, WASH.—Plans for the \$1,500,000 bascule bridge at Spokane street indicate that bids will be called for by January 1.

SEATTLE, WASH.—It is estimated that the proposed sewer in West Seattle will cost \$124,913. Final plans will be prepared shortly.

HOQUIAM, WASH.—The city engineer has been instructed to call for bids for the installation of a boulevard lighting system on 8th and I streets.

BEND, ORE.—Harney Valley will hold a bond election on October 18 for voting upon the proposed \$2,000,000 dam and irrigation project on the Silvies River.

SEATTLE, WASH.—Opening of bids for the construction of structural steel emergency dams for Lake Washington ship canal locks has been postponed until October 22 by U. S. Engineer's office.

PORTLAND, ORE.—A decision has been reached to enlarge municipal terminal No. 1 with a 955-ft. addition to cost \$100,000. City engineers are preparing the plans and specifications.

HAMILTON, MONT.—It is estimated that from \$500,000 to \$800,000 will be required to reconstruct and improve the Bitter Root irrigation district canal system here, according to Major Power, of Seattle.

WALLA WALLA, WASH.—Geo. F. Judd of the Dalles-Kings Products Co., on a visit here, announced that he will return here later to look up fruit figures with the view of establishing a dehydration factory here.

RICHLAND, WASH.—Richland will soon be out of water because of the decision announced by the Horn Rapids Irrigation Co. that they will shut down their water works, due to the fact that it has not been paying for some time.

SEATTLE, WASH.—To avoid the necessity of issuing bonds, A. Lindsay, water superintendent, has been asked to spread his estimate of \$268,000 for water improvement over three years, starting with the most essential in 1922.

ELLENSBURG, WASH.—J. N. Newman of Thorp appeared before the county commissioners asking that the Yakima river be returned to its course by building a dike. Irrigation ditches are being destroyed by the change in the river's course.

SEATTLE, WASH.—Plans are being considered by the street department for the construction of a concrete and steel trestle, one-half mile long, to replace the present wooden bridge over the Argo railroad yards on First Avenue. Estimated cost is \$750,000.

SPOKANE, WASH.—O. L. Stevens, western representative for the L. R. Steele Service Corporation, has announced that \$2,000,000 will be spent by that company during the coming year for the erection of buildings in seven cities of this state. Spokane's allotment is \$500,000 of this sum.

SEATTLE, WASH.—President Geo. W. Merrick of Merrick Co., Yakima, is desirous of getting in touch with contractors who are at present in a position to assume at least a portion of the Horse Heaven irrigation district bond issue as a basis on which contracts can be secured. The Merrick Co. has options on certain cost bonds in connection with a \$25,000,000 project.

SPOKANE, WASH.—The Arctic Pump Manufacturing Company has been incorporated here by G. B. Kemp and R. S. McClintock. The company will manufacture all kinds of mechanical and electric pumps and cooling appliances.

THE PACIFIC CENTRAL DISTRICT

AUBURN, CAL.—George Fisher is planning to erect a building and a number of dehydrators for his fruit drying business.

GRASS VALLEY, CAL.—Three camps have been established for the surveyors at work on the distributing system of the Nevada Irrigation District.

SACRAMENTO, CAL.—Plans for a \$23,860 factory, to be erected by Chas. H. Lomery at the rear of 1128 B street, have been received by the building inspector and a building permit issued.

EXETER, CAL.—At a meeting of the trustees Sept. 21, arc lights were ordered installed at different points in the city. This will make Exeter one of the best-lighted cities in the valley.

IRVINGTON, CAL.—Surveys preliminary to the grading and first construction work of the Reid Bros., Inc., \$250,000 hospital supplies manufacturing plant to be built here were made by engineers of the company.

OAKLAND, CAL.—The Great Western Meter Company will invest \$125,000 in a plant at the corner of Powell and Beaudry streets, Emeryville. They will manufacture two types of irrigation and gasoline meters.

OAKLAND, CAL.—The Parr Terminal Co. reports that the American Petroleum Co. contemplates investing \$20,000 in a plant on the Parr Terminal property for importing and exporting mineral and vegetable oils.

NORTH SACRAMENTO, CAL.—G. Hunter, acting for the American Brooder Company, will erect a brick building 60 x 90 feet on an acre tract at the junction of Del Paso and Auburn Boulevards, for the manufacture of brooders.

SAN FRANCISCO, CAL.—J. L. Craig, interested with Edward Munford, William George Loomis and W. Sam Clark in the Clarkadota Fig plantations, announces that within the year a \$300,000 fig cannery may be built in Stockton.

OAKLAND, CAL.—The Bay Belting Company of San Francisco, E. W. Bosworth, president, O. L. Hoffmeyer, superintendent, have announced the purchase of property at 520 Broadway, Oakland, where they will construct a plant at once.

FORT BRAGG, CAL.—The American Car Equipment Co. has been formed with J. A. Pottis as president and C. D. DeMar, manager, for the manufacture and marketing of a new brake tester. No site has yet been selected for the plant.

MODESTO, CAL.—A resolution authorizing formation of the El Soyo irrigation district, comprising about 4,000 acres in western Stanislaus county, was adopted by the supervisors. Roy N. Pike director; C. B. Smith, assessor, collector and treasurer.

FAIROAKS, CAL.—That \$1,000,000 will be required for the purchase of the system of the North Fork Ditch Co. and improvements desired in Sacramento county irrigation districts, is announced. It is proposed that 24,000 acres of land be watered under the plan.

SAN FRANCISCO, CAL.—Radio fog signal plant is to be installed in San Francisco, being the only one of its kind on the coast.

SOUTH SAN FRANCISCO, CAL.—The Fontana Food Products Company, manufacturers of macaroni, have secured a site of land near the Southern Pacific Railroad and will erect a Class A reinforced concrete plant to cost about \$500,000. M. E. Fontana is president.

PETALUMA, CAL.—At a mass meeting Sept. 26 the plan of the city council to purchase the property of the Petaluma Power and Water Company and to build another reservoir to provide a capacity of 659,000 gallons for the year, was approved. The entire cost will be \$722,000.

SAN LEANDRO, CAL.—The Oakmoor Improvement Club, Frank V. Boll, president, petitioned the city trustees to establish a lighting district for the erecting and equipping of electroliners in the Broadmoor section. Four hundred electroliners would be required, estimated cost, \$60,000.

TURLOCK, CAL.—Sealed bids will be received until 10 a.m. November 1st, by the board of directors of the Modesto and Turlock irrigation districts, Turlock, for the furnishing and delivering of complete electrical equipment for a 15,000-kva. plant, consisting of three units of 5,000 kva. each.

BRIDGEPORT, CAL.—A company incorporated by W. S. Wentworth of Alameda, George C. Holbrook of San Francisco and Leonard E. Wing of Sacramento, plans to establish a plant at Mono Lake, Mono county, for the extraction of mineral salts from the water; capital stock, \$150,000. Sacramento will be the principal place of business.

RICHMOND, CAL.—The United States Electric Co., represented by A. P. Gillies of San Francisco, is looking for a site here to establish a plant for the manufacture of steel by electric processes. The company would provide its own power and would use ore from deposits on the coast and in South America. The plant would provide employment for about 5000 men when completed.

SACRAMENTO, CAL.—Chas. E. Virden, president of the Virden Packing Co., has announced that a large plant for the cooling, smoking and distribution of packing house products for northern California will be erected immediately at Fifth and R streets, Sacramento. The building will be reinforced concrete, costing approximately \$150,000. McGillivray Construction Co. are the contractors.

SAN FRANCISCO, CAL.—Further extension of the municipal railway lines to include the one now terminating at Grafton and Brighton avenues, into Ocean View, has been provided for by the board of supervisors with an appropriation of \$110,000. The extensions already provided for with appropriations are: Haight and Ashbury, \$200,000; Sunset, \$500,000; Taraval avenue or Parkside, \$150,000.

SAN FRANCISCO, CAL.—Plans are being made by the Engineering Department of the Pacific Gas & Electric Company for the following work: Construction of a steel frame and concrete substation on Lake Temescal, Claremont, estimated cost, \$20,000; construction of a steel frame and concrete substation at 50th Ave., Melrose, Oakland, estimated cost, \$20,000; and construction of a steel frame and concrete substation at Newark, Alameda county, to cost \$20,000.

GILROY, CAL.—At the meeting of the city council held Sept. 19 the following resolution was passed: That the electric light and power plant belonging to the city of Gilroy, and the gas generating and distributing system of the city of Gilroy, be sold and the proceeds devoted to making improvements and extensions of the water system and sewer system.

OAKDALE, CAL.—The Pacific Asbestos Company has been organized to take over the mountain of asbestos located 15 miles from Oakdale. It is planned to erect a large mill at the mine, to separate the rock from the asbestos, and it will then be baled for shipment from Chinese. The company is considering the erection of a plant in Oakdale for the manufacture of asbestos products.

THE PACIFIC SOUTHWEST

EAGLE ROCK, CAL.—The bond issue for a new city hall has been voted and plans will be drawn at once. A total of \$35,000 is available for the building and equipment.

INDEPENDENCE, CAL.—The Owens Valley school district is having plans prepared for a school building to cost \$35,000. Wm. H. Weeks of San Francisco is the architect.

LONG BEACH, CAL.—Contract for a new factory building for the Golden Gate Woolen Mills at 17th and Nadeau Ave. has been awarded to the Long Beach Brick Co. for approximately \$130,000.

BAKERSFIELD, CAL.—It was reported that an irrigation project to cost \$21,000,000 and to serve 90,000 acres is being promoted in the Indian Wells valley, 110 miles northeast of Bakersfield.

SAN DIEGO, CAL.—Miller and Eddleman, local contractors, were awarded the contract for the junior high school. The general contract bid was \$277,800 and called for an immediate start on the work.

PHOENIX, ARIZ.—Additions and remodeling contemplated by the Mountain States Telephone & Telegraph Company will call for the expenditure of \$95,000. G. E. Walker Construction Co. is the contractor.

LONG BEACH, CAL.—The California-Mexico Oil and Refining Company will start work in October on its oil refining plant. Vern Dumas is quoted as saying the company will spend \$450,000 on the project.

EL CENTRO, CAL.—Imperial Ice and Cold Storage Company have given the contract for their new ice plant to C. M. Gay and Son of Los Angeles. The total cost of buildings and machinery will be \$250,000.

GLENDALE, CAL.—At a Chamber of Commerce luncheon recently, Geo. B. Carr, president of the Baldwin Shirt Co. of Parsons, Kan., announced that he had selected a site for a branch factory at Glendale.

TUCSON, ARIZ.—Definite plans to proceed with the new high school were made and Lyman, Place and Jaastad, architects, will prepare the plans. The bond issue calls for \$750,000 to be used for this purpose.

SAN FERNANDO, CAL.—The Big Pine Fertilizing Company contemplates the erection of a factory on seven acres of land located at Hubbard and Porter Avenues. George W. Abels, Los Angeles, is manager.

VENTURA, CAL.—Sanford Butts, of the Chamber of Commerce, has received, through the agency of Gabbert, Moore & Dingham, a communication from an insulating material manufacturing company which wishes to locate here.

LOS ANGELES, CAL.—A three-story fire-proof addition to the County Hospital will be made. Plans include electric elevators, refrigerating plant and other equipment not in general contract. The total cost is estimated at \$300,000.

ANAHEIM, CAL.—A total of \$50,000 in bonds was voted for the improvements of the water system. The work will provide for a new well, motor-driven pump and extensions to the mains.

WILMINGTON, CAL.—A new building to house the administration and laboratory departments of the Union Oil Company will be erected under the supervision of the company's engineers. The structure will cost \$256,000 when completed.

LONG BEACH, CAL.—Long Beach Petroleum Association is considering plans for establishing a refinery with capacity of 5,000 bbls. of crude oil. A 12-acre site has been secured in the local harbor, it is reported, adjacent to railway and dockage facilities.

LONG BEACH, CAL.—Ocean Boulevard will have a nine-story apartment with 58 two, three and four-room suites. Automatic electric elevators, refrigeration machines and other special equipment will provide for exceptional service as a family hotel.

LOS ANGELES, CAL.—Construction of the Pacoima and San Gabriel dams will follow the completion of the Devil's Gate dam, according to C. J. Burnham, engineer with the Los Angeles county flood control district. The Pacoima dam will cost \$1,500,000.

MERCED, CAL.—The city trustees have adopted plans for the big ornamental street lighting system. The final decision was for marbleite posts and with the completion of the work will cost \$300,000. It is contemplated that 460 posts will be installed at this time.

LOS ANGELES, CAL.—Approximately \$600,000 will be expended in a new ice cream plant which will have a capacity of 100,000 gallons daily, and refrigerated storage for 20,000 gallons. W. A. Heitman Construction Company is the contractor for the Keeler-Comey Company, owners.

PHOENIX, ARIZ.—The Los Angeles office of the Santa Fe Railway is asking for bids on the new union depot for this city. Mission architecture will be followed throughout. Part of the building will be two stories and the front will have an arcade 250 feet in length. The cost will approximate \$275,000.

MERCED, CAL.—Manager Warner of the Merced Irrigation District, announces that his board of directors contemplates the purchase of the Crocker-Huffman irrigation system and rebuilding a portion of the system to increase its capacity, and an extension, the whole project to involve an expenditure of \$4,535,000.

PHOENIX, ARIZ.—Plans for the construction of an earth-filled dam, unanimously agreed upon by engineers representing parties interested in the control of the Case Creek flood menace, will be presented to the board of engineers by a committee appointed to formulate plans. City Engineer L. B. Hitchcock was selected as permanent chairman.

LOS ANGELES, CAL.—Construction of a \$1,000,000 plant and centralized executive offices from which Pacific Coast and transoceanic orders will be taken care of, etc., will begin soon for the Westinghouse Electric & Manufacturing Co., on San Pedro St. between Fourth and Fifth Sts., as announced by K. E. Van Kuran, local district manager. A site for a plant has also been selected in San Francisco.

MERCED, CAL.—The Merced city trustees have adopted plans and specifications for a complete electrolier lighting system, estimated cost \$300,000. The plans call for 460 electroliers of marbleite, with high power lamps.

LOS ANGELES, CAL.—A. A. Comey announces that plans are under way for the erection of a new ice cream manufacturing plant, to cost approximately \$700,000. The plant will be owned and operated by a company headed by W. E. Keller, president of the Globe Milling Co.; Mr. Comey will have personal direction of the factory.

LOS ANGELES, CAL.—The Davis Radio Signal Co. has recently incorporated with a capital stock of \$25,000; directors, Chas. L. Davis, Victoria Davis, and Louis Gastineau.

LOS ANGELES, CAL.—Sealed bids will be received up to 11 a.m., Oct. 17, by the Board of Supervisors for furnishing and installing engine generator set with necessary piping and wiring for engine room in the county hospital, in accordance with specifications on file in their office.

NATIONAL CITY, CAL.—The California Gypsum Company has applied to the State Harbor Board for a lease of 40 acres of National City tidelands, for the purpose of erecting a gypsum factory to cost \$250,000—railroad tracks to be laid, pier enlarged, and channel to be dredged. It is reported a railroad will be constructed from the gypsum mountain to a point on the San Diego, Arizona Railroad between Dixie Land and Coyote Wells, and large equipment installed at the reduction plant. Work is expected to start within 30 days.

THE INTERMOUNTAIN DISTRICT

SALT LAKE CITY, UTAH.—The Rio Grande shops are now employing 900 men, which is nearly their normal figure. Steady work is in prospect, with a large number of locomotives and cars on hand for repair.

BOISE, IDA.—The Mountain States Telephone & Telegraph Company, at a recent conference of officials held at Boise, has decided upon the expenditure of \$400,000 in southern Idaho on the system's lines and exchanges.

OGDEN, UTAH.—Electrical equipment to be used in the manufacture of flour is being installed at the Globe Grain and Milling Company's mills in West Ogden. It is anticipated that the plant will be placed in operation about January 1.

DILLON, MONT.—The federal power commission granted a license to the Rock Creek Power Co. of Missoula to build a diversion dam, a three-mile conduit of open cut flume and wood stave pipe construction, and power house operating under 6.6 ft.

WABUSKA, NEV.—A huge deposit of Iceland spar used in manufacture of surgical instruments and high grade glass, has been discovered in the hills seven miles north of Wabuska. The owners are preparing to sink several fifty-foot shafts and block out the product preparatory to shipment.

SALT LAKE CITY, UTAH.—The Bennett Glass & Paint Company, 67 West First South street, is erecting a five-story building immediately east of its present property, to cost \$30,000, for use in connection with the company's present business. It will be ready for occupancy in the early spring.

ST. ANTHONY, IDA.—The new Wright potato storage plant, which is the largest of its kind in the intermountain country, has just been completed. The Wright firm contemplates the erection of three other large plants next spring. Three other concerns also contemplate entering the field next year.

DELTA, UTAH.—The lines of the Deseret Power Company and the Telluride Power Company have been connected, and Delta is now receiving its electrical energy from the Telluride company. H. A. Lawrence is making preparations to greatly increase the service and a number of new lines are to be built into the various communities.

ST. ANTHONY, IDA.—A meeting of mayors and city councilmen of Rexburg, St. Anthony, Idaho Falls and Ashton was held recently for the purpose of considering the feasibility of establishing a joint municipal power plant to serve these communities. Committees were appointed to investigate sites and consider other details in connection with the proposition.



NEWS SELECTED FOR OUR READERS

Special churches for the deaf are to be provided in Hanover, England. They will be provided with a telephone transmitter, into which the preacher directs his voice, together with from 50 to 100 receivers to be worn on the worshiper's heads.

* * *

A crusade against the parking of chewing gum on the seats of moving picture theatres and other public places has been launched by the police force of Klamath Falls, Oregon.

* * *

It is calculated that 165,000 tons of soot falls on London every year as the result of the combustion of the 17,000,000 tons of coal Londoners annually consume.

* * *

Unprecedented activity is reported in the marble market, owing to the fact that the past year has seen the greatest demand for soda-water fountains and their accessories in the history of the trade.

* * *

Electrical vibrations are credited with being responsible for all earth's diseases, by a writer to a local paper. The influenza started, he points out, in the Himalaya mountains, the highest in the world and probably the most subjected to electrical storms. The plagues have all come west, against the rotation of the earth, the reason being that the atmosphere lags a little, thus bringing one place after another in contact with this electrically generated freak current.

* * *

Electrical fans installed in the barn of a California ranch are credited with increasing the milk output, in some cases as high as twenty additional pounds of milk per cow.

* * *

A Substitute for the Movies

A recent item states that wireless telephony is to be given a tryout in Chicago's police system. Sending apparatus with four antennae capable, when working in combination, of sending 1000 miles, will be installed on the roof of the city hall.

To begin with, receiving sets will be installed on two fire boats, two lake cribs, two fire engine houses, two police stations, the Englewood fire alarm office, two patrol wagons, and two of the fast automobiles of the detective bureau.

Sound amplifiers at the receiving stations will be sufficiently strong to permit the voice at the central station to be heard from 50 to 100 ft. from the horn-shaped receiver, and the voice of the person at headquarters giving information about the latest crime will be heard above the exhaust and noise of a speeding automobile.

We anticipate a protest from the newspapers. What are the "extras" going to do for headlines when all the small boys of the neighborhood, lined up hungrily within range of the amplifier, have already spread the luscious details far and wide?

STRANGE COINCIDENCES

Mr. Brown was run over on Market Street by a Ford automobile. Strangely enough this is the make of machine which Mr. Brown himself possesses.

* * *

Mr. Jones ordered fish for lunch on Friday and on arriving home that evening found that his wife had prepared fish for dinner as well!

* * *

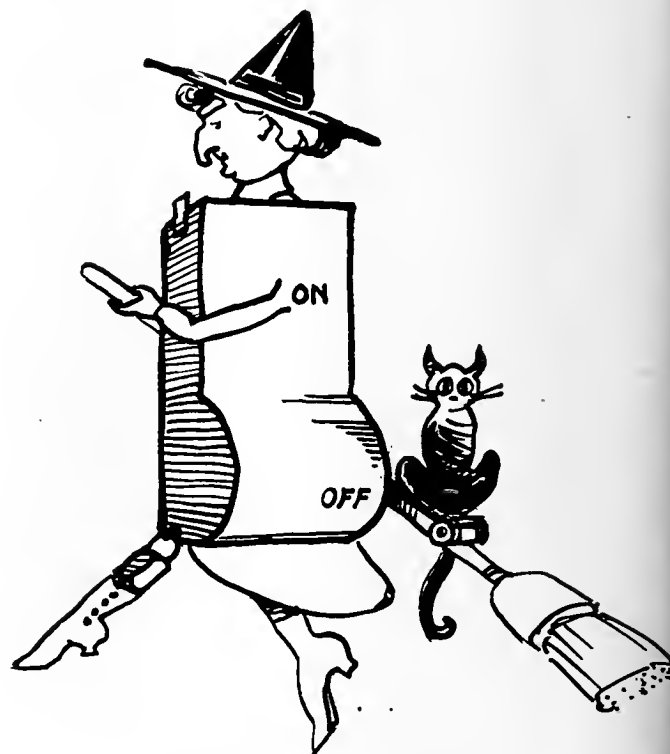
Both Mrs. Smith and Mrs. Green tried to telephone each other at exactly 3 p. m. By a strange coincidence central told both of them that the line of the other one was busy.

* * *

The hero and the heroine on the Atlantic liner discover that both are going to the same place—America.

* * *

ELECTRICAL HYBRIDS



XIV — The Electric Safety S-switch

The switches which switch off the power by night
And turn on the current by day
Are mysterious witches, which is, you might say
Of a governing class making light.

When they're "on" to what's moving, they work at high pitch
And yet sometimes they're "off" like a flash.
They are safe and to work them is no longer rash—
If you know, that is, which switch is which.

Journal of Electricity and Western Industry

25 Cents a Copy

November 1, 1921

San Francisco



The majestic redwoods, living through the ages, have witnessed steady improvements from the primitive method of obtaining personal warmth and comfort from natural resources. Man's modern method, electricity—still utilizing nature's gifts—today gives warmth and cheer to countless homes and offices, through MAJESTIC Electric Heaters.

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PRODUCERS OF MAJESTIC INSTANTANEOUS
ELECTRIC WATER HEATERS



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Journal of Electricity and Western Industry

A semi-monthly chronicle of western events, advocating the economy, efficiency and convenience of electric power for all industries of the West—manufacturing, agricultural, mining, merchandising, home building and home making. Interpreting the value of electrical development to the business and financial man, the industrial man, the power man, wholesaler and retailer, contractor and constructor, engineer and home owner.

Because of the abundance of water power in the West susceptible of economical development, a dependable, uninterrupted supply of cheaper electric power is assured for these industries. The basic industry of the West—hydro-electric power generation—for which Journal of Electricity and Western Industry is the spokesman, is therefore logically and inseparably linked to the growth and prosperity of all phases of our daily life and business.

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ELECTRICALLY EQUIPPED LUMBER MILL AT ONALASKA, WASHINGTON, MAKES RECORD CUT

One day's cut of 302,000 board feet of lumber, made by a single saw, is a recent achievement of the Carlisle-Pennell Lumber Company's Onalaska plant, pictured above. The adaptation of electricity to the development of the lumber industry of the Northwest is one of the outstanding accomplishments of the past year.

Electrical equipment has played a large part in speeding up production and cutting down maintenance and operating costs. The analytical study given to the necessary power applications has developed a number of special motor drive schemes not previously used which have all tended toward elimination of waste motion and power and the consequent saving of repair and up-keep costs.

Never before has the saw mill industry seen so many and such large changes, from steam to electric drive, as have been made during 1920. Few mills were constructed during this period, so that the large volume of mill electrification is the more striking. It has meant the change over from steam to electric drive of established leading mills, some of which have been operated by steam power for over fifteen years, while others were new steam-driven mills scarcely three years ago. Today this three-year-old steam-drive equipment has been considered too costly to operate and has been removed to make way for complete electric drive. Competition, together with the unusual economic situation now prevailing, has required that the most advanced equipment be used.

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Fundamental Relationship of Local Branches to the National Body

IN the leading editorial of the issue of September fifteenth, the Journal of Electricity and Western Industry went on record as favoring home rule in electrical organizations, with the national associations standing in the role of clearing house and caring for such national interests as required concerted action. There have been so many expressions of endorsement of this stand from all parts of the West, that we are led even more strongly to define our position.

We believe in national organization. No state and no district stands alone in its problems. We do not believe that the West can solve the Japanese problem, nor the south the free trade problem nor the northeast the fuel problem single-handed. The West in particular, with its tremendous promise of growth, needs not only the advice and wisdom of the rest of the country which has already had to meet some of the problems we are now facing, but needs as well the financial backing which comes with interest and good will.

In spite of the acknowledged importance to this region of national affiliation, however, word has come within recent months of the withdrawal of the Washington, Oregon and California Electrical Contractor-Dealer Associations from the national body, of controversy between local divisions and national organization in the N. E. L. A., of dissatisfaction in the matter of financial arrangements between several of the local engineering sections and their parent bodies. Indeed, the problem is one of such widespread and fundamental nature that a slight friction has come to be conceded as the normal relationship between local organizations and national groups.

There is something back of this other than sectional feeling. The vital principle at issue is not an exclusively western problem at all, but lies in the whole basis of relationship between national organizations and their branches. Our suggestions here are made solely in the hope that a firmer national relationship may be established.

Most national associations suffer from the fact that they grew from the top down and that, aside from the first two or three branches, all others were established from headquarters with more or less superimposed functions. No organization can be stable which has not its roots in local soil. The local body should always be the working body, with a national clearing house to prevent duplication of effort and to make available to all parts of the country the wisdom gained through the experience of one, as well as to act in national situations with the influence of a nation-wide group. A co-operative campaign, for instance, is of value just so long as it is a product of local thought and effort—just so soon as you begin to make it a correspondence course with inspiration passed down from above, it loses its power of accomplishment. An electrical body, if it is to mean something in the solution of local problems of establishing good will or of overcoming special geographic engineering conditions, must have the interest and the active thought of its local industry.

We believe in national organization. We cannot get along without it. We believe that it is worth what it costs to support for the sake of its national influence, even if there were no concrete return to individual sections. More selfishly, we recognize the constructive pioneer work which national organizations are carrying on in backward territory and we recognize that in some respects the West may be regarded as backward. We deplore the break in national affiliations which has been thought necessary by certain western organizations. We believe it to be but temporary—just as are the other frictions which rise to the surface in all organizations from time to time. But we believe that there is need of clear thinking on both sides before a firm relationship can be worked out—and we believe that the constitution of the United States makes wise provision for leaving the bulk of the functions of government as well as the levying of the major burden of taxation to the individual states and their subdivisions.

A Proposed Burden That Seems Unwise For Citizens to Assume

CALIFORNIA has long been recognized as the leader in hydroelectric development in the United States. Now the state is forging into the lead in other lines. Census figures just announced show that California stands eighth in the value of her manufactured products and fifth in the number of her manufacturing industries, a startling state-

ment that will cause leaders of industry the nation over to ponder the wonderful possibilities of the future for the industrial West.

This record industrial progress has been made possible by the development and utilization of electric power. Seeing the possibilities in the wealth of California raw products, private enterprise has gone into the mountains, harnessed the rivers and today is furnishing over a million horsepower to turn the

wheels of the state's many factories, with an efficiency that has brought credit, vision, enthusiasm, and renown to the West.

Yet there has been launched in California a campaign for a proposed Water and Power Act to deprive the West of individual initiative—an enactment that would mortgage the taxpayers of the state to the extent of \$500,000,000 for the development and exploitation of the remaining water resources, to be controlled by a body of five men to be appointed by the Governor every four years. Here is a proposed expenditure of public moneys under the control of five short-term political appointees that is open to the possibilities of improper manipulation far beyond anything ever attempted in the West. Under the terms of the bill, bonds will be issued to finance the undertaking, which will furnish power to various communities, these in turn to reimburse the state from the earnings of the properties, if there are any. Property of any private power corporation would be liable to condemnation and seizure by the board controlling the funds. On another page of this issue of the Journal of Electricity and Western Industry the proposed initiative measure is set forth in full with comments covering certain sections.

On paper the scheme at first glance may seem to sound perfect, but there are too many examples of governmental control of utilities, whether state, national or municipal, which have failed, to induce any sound thinking citizen to hold any other conviction than that such expenditure of the enormous sum of \$500,000,000 will be in grave danger of possible misdirection.

Private utilities have spent and are spending millions of dollars in the development of the water power resources of the state, under the most rigid state supervision and regulation. For the state to enter into competition with such established companies is highly unjust. Considering the question from another angle, such a procedure would endanger the state treasury to the extent of over half a million dollars in taxes paid by these existing companies and throw this burden on the taxpayer. California's tax burden has already reached the point where any further load on the shoulders of the taxpayers is liable to prove disastrous. During the fiscal year ending June 30, 1921, the people of the state paid a total of \$336,592,000 in taxes, an average of \$98 for every man, woman and child. Yet with the cry for retrenchment, less taxes and more efficiency in the government on every side, there is proposed this enormous expenditure with its possibilities of disaster and vastly increased taxation burden. The proponents of this bill state that it means no increased taxes. And yet the bill itself states that unlimited funds of the state may be drawn upon in event of failure to meet bond interest or principal from the sale of power.

Why not first put the publicly owned utilities and privately owned utilities under the same rigid state control, subject to the same rigid accounting of moneys so that comparative statements and

claims of both parties to the move can be checked and the people thus enabled to get down to the real truth of claims that are being made by certain municipally owned plants?

Every sane thinking citizen in California should consider well the advisability of further saddling the state and themselves with a half-billion dollar obligation. Indeed, the slogan of the hour is "Less government in business and more business in government."

The Extension of the Industrial Relations Idea

THE industrial relations idea, now so helpfully in operation in cities of the West, particularly in Los Angeles and San Francisco, should rapidly be extended to other communities throughout this region. This plan is the outcome of the recent building trades dispute of the San Francisco bay region. It provides for an independent body, permanently financed, to pass on wage problems and local labor relations, with the province of upholding minimum wage standards and acting as referee in cases of dispute. Formal organization should be avoided. Local contact between employer and employee and with the community served is the thing which makes the industrial relations idea of such great present day helpfulness in the West.

Intimate cooperation between industrial districts of the West must constantly be maintained and it is highly desirable that some form of informal western clearing house be established for ideas or suggestions as to how industrial communities may the better serve the public, at the same time keeping always in view the motive of betterment for both employer and employee. The movement is the first attempt to solve the labor problem which provides a permanent body looking toward the prevention of disputes in the interest of all three parties to the issue—the public, the employer and the employee. If these organizations succeed in actually putting into practice the impartial justice which is their aim and thereby gain the confidence of the public, and eventually of labor—their possibilities of helpfulness are unlimited.

Should a Tailor Be Well Dressed?

AN automobile salesman who modestly admitted to years of experience in his line, once sold a car for his competitor by being forced to admit to the prospective customer that he did not own and drive the same make of car he attempted to sell. The new purchaser followed what the salesman *did*, not what he *said*.

A progressive merchandiser of electrical goods in selling his employes the how's and why's of convenience outlets, discovered that only a few up-to-date appliances were in use in the homes of his sales force.

What could be better salesmanship than a campaign right now among the industry's sales forces to give them the power that goes with the ability

to say truthfully, "I use this in my home and like it." We sell on time to others, why not do the same to our employes, or even go farther—follow the established rules in mercantile business, and sell them the appliances at special prices?

Convenience devices that will be really used in the homes of the sales force will put a conviction behind sales argument that would-be purchasers will be quick to recognize and pay heed to. The holiday sales season is a good time to begin.

The Cocaine Habit and Industry

THERE has long been a certain under-talk concerning the negroes of the South and how cocaine has been dealt out to them by contractors engaged in certain levee work on the Mississippi River. Little open and above discussion of this great problem has appeared in the industrial press. It is quite evident, however, that the matter has a very direct bearing upon the industry of today, and particularly upon the industry of tomorrow. Recent publicity has called the attention of the West to similar dangers which are becoming more serious in this section of the country. Judge Jacks, in a recent talk before the San Francisco Electrical Development League, pointed out how the California police courts are divided into four groupings—the women's court, the auto court, the general court and the court for "narcotics." His description of a "narcotic," and particularly the cocaine fiend, was distressing. But above all his plea that some means be established whereby the one addicted to the cocaine habit may be bettered or perhaps cured, so that he may give to the industry of the state the service which the commonwealth has a right to expect of him, is a matter which should receive more careful consideration by industry at large. For the good of the state the weaker brother, addicted to cocaine, should receive more thoughtful attention.

Wireless Equipment

For Our Homes and Schools

THE announcement that a high school in the West had inaugurated a news collecting bureau through radio-communication service marks another step in the lives of the coming generations that has been missing heretofore. Parents see a wonderful influence for good and a stimulating of the natural research in youthful minds if they have a boy in the family today. Listening to radio-telephone conversations or picking up and recognizing the calls of radio stations hundreds of miles away, is the pastime and privilege of any youth that tries.

It is possible now, to buy serviceable radio outfits at low prices from standard manufacturers which do not interfere with the service from lighting or telephone companies, and dealers are appreciating the value of this business which has quick turn-overs on small capital. The electrical industry has made another valuable contribution to the welfare of humanity when it developed the principle of

radio communication to the point where it holds the boy at home in the evenings while providing profitable study and amusement. Every home with a boy is a good prospect for radio equipment and it should be supplied through the well established channels of safe electrical merchandising.

Worth While Accomplishments of the "Save the Redwoods" Movement

THE front cover of this issue shows an impressive stand of California redwoods. These giants, the "oldest living things on earth," are among the great natural beauties of the West. It so happens that they are also among the economic resources and available for redwood timber. It is to the credit of this part of the country, however, that it has been recognized that no return of the immediate future could justify the destruction of these living monuments. The Save the Redwoods League, a group of public spirited citizens who are banded together to protect the remaining redwood groves, has already succeeded in saving from destruction 600 acres of the finest redwood stand in Humboldt county.

Through their instigation 160 more acres were recently dedicated to the people of the West by Dr. Phillips in the "Bolling Memorial Grove." Last May, after an active campaign led by the Redwoods League, the legislature appropriated \$300,000 to save the finest groves within a limited area along the state highway. The league itself has purchased 40 acres from its own funds.

At the present time the organization numbers 4,000. If its effective work is to be continued it needs further support, both in donations and in membership. Anyone interested should communicate with Robert G. Sproul, Comptroller of the University of California, who is secretary-treasurer of the league.

The Banking Stability of the West

IT is with great interest that economists are following the present situation west of the Rocky Mountains and noting that the general business conditions prevailing in the nation at the present time indicate a better situation in the western states than prevails elsewhere. One outstanding reason for this situation is the strong banking development that has taken place in the West during the past decade. One instance alone will suffice to illustrate this point. A recent report of the Superintendent of Banks for the state of California shows that one district, which in 1911 had seventy-three banks with twelve branch houses and \$95,000,000 in deposits, today, just ten years later, has seventy-three banks with sixty-one branch houses and \$341,000,000 in deposits, a growth of almost 400% in ten years' time. This one commonwealth of the West, California, with its \$2,400,000,000 in banking assets, means much for the continued hydroelectric development of the West, and industry generally throughout the nation as a whole appreciates the stability which the present situation insures.

Western Comment on Current Events

Editorial Notes and Readers' Views on the Outstanding Aspects of Financing,
Trade Promotion, Legislative and Associated Topics that have a
Special Bearing on Western Business

Fruit Growers Plan Steamship Line

California Fruit Growers' Exchange Contemplating
Six Vessels to Run Between Los Angeles
and the Eastern Coast

A new steamship line to operate between Los Angeles and the eastern coast and to be known as the Producers' Steamship Company is reported to be a project recently undertaken by the California Fruit Growers' Exchange. Plans for the building of cold storage plants and docks to accommodate six vessels which will be used in the new trade have already been laid before the San Pedro Board of Harbor Commissioners by the Los Angeles Chamber of Commerce together with officials of the Fruit Growers' Association, according to these reports. C. S. Whitcomb of the Fruit Growers' Exchange is quoted as stating that the six ships are expected to arrive on this coast in March or April of next year. They will be Shipping Board steamers of the 7500-ton type.

This announcement comes as a result of the experiments carried on during this past year which have established the practicability of water shipment for citrus fruit, record of which was published in a recent issue of Journal of Electricity and Western Industry. Such a line offers a happy solution of transportation problems which have been hindering western enterprise and there is no reason why it should not prove successful. The principle has already been tried out in eastern shipping centers where fruit interests are responsible for more than one of the established steamship lines.

Perfect Package Month for November

Public Carriers Uniting in Campaign to Improve
Packing Methods of Shippers, Thereby
Bettering Transportation Service

Something like 27,000 packages go astray through the express offices of this country every month through the carelessness of senders who mark the address upon them in illegible hieroglyphics—or not at all. As a lesson alike to shippers and employees, railroad, steamship and express companies have designated November as "Perfect Package" month. During this period you are urged to pack your shipment substantially, not endeavoring to send an electric motor in a paper carton, for instance, nor a collection of miscellaneous hardware in wrapping paper; you are asked to see to it that all old marks and addresses are obliterated from the package and

that the fresh address be legible and visible. Do not use a tag if the proper marks can be written, nailed or pasted on the article itself. If tags are used, see that they do not carry advertising matter which can be misconstrued as an address and cause the misdelivery of the package.

Perhaps you feel that this advice does not apply to your well ordered establishment—but it has too frequently been demonstrated that the head of the house may have no knowledge of what goes on in his shipping room. If you find packages returned from the express company during the next month with a request that they be wrapped or labeled to comply with regulations, do not blame the express service, but investigate the records of your shipping room. Perfect package month should serve as an opportunity for the recognition and the checking of many a small leak.

Western Shipments Through Canal

Growing Trade with Europe from Pacific Coast
Shown in Records of Panama Canal Tonnage.
South American Markets Active

Over eleven million tons of goods were shipped through the Panama Canal during the year ending June 30, 1921. Of these the largest tonnage was transferred between the east coast of the United States and the west coast of South America. Trade between the United States and the Far East ranks second, and United States coastwise traffic third. The route fourth in importance is that between the west coast of the United States and Europe. The data on coastwise shipments show that trade from the Pacific to the Atlantic and the Atlantic to the Pacific just about balances. The total cargo movement from Pacific to Atlantic during the year amounted to 5,707,136 tons.

The figures indicate impressively how much trade with the west coast of South America and with the Orient is being handled direct from eastern and European centers. Pacific coast manufacturers and Pacific coast shipping interests are in a position to give much more direct and personal service in these fields and may look forward to a trade worth cultivating, both to the south and to the east. A considerable trade is growing up between Pacific ports and Europe, on the other hand, providing an important outlet for fruit products, lumber and purely western manufactures. Questions of Oriental policies have long been a matter of western concern—and it is well for us to realize that the West

can no longer afford to stand aloof in matters of European relationships.

English Range Merchandising Method

Chamber of Commerce Survey Indicates Merchandising Methods on Gas and Other Equipment Under Conditions of Backward Market

In view of the discussion of electric range merchandising which has been active in western centers, the survey of British markets for labor saving devices recently carried out by the United States Chamber of Commerce in Great Britain is significant. The report points out that the demand is somewhat backward, owing to a relatively low purchasing power on the part of the public and also to the fact that a large number of houses are unwired for electricity. In regard to electric ranges, it states:

The high cost of coal in Great Britain and the scarcity during the various coal disputes has turned the thoughts of housewives towards substitutes for the kitchen range, always a source of much dust and labor, and long ago discovered to be wasteful. Some of the gas companies (who enjoy a monopoly) have turned the screw and made matters more difficult by refusing to hire out or grant the free use of stoves, as had been the custom previously. The consumer must now purchase the stove outright or by instalments. There never was a better opportunity for the electric range, but with such a small number of houses wired, the chance was lost and numerous consumers were driven back to oil stoves which are now enjoying a season of popularity helped by the short-sighted attitude of the gas companies.

It is evident that merchandising through local dealer establishments has not yet come to play the important part in English markets that it has in this country.

West Meets Unemployment Situation

Response From City Officials and Manufacturing Organizations Indicates Prompt Handling of Unemployment Problem

Local committees on unemployment are being formed in most of the western cities in response to the appeal of the national employment conference for local action. The situation in this part of the country has not been so acute as elsewhere, but on the other hand, the word of better times on this coast has drawn many drifting workmen here in search of employment. In addition to the official action taken through city councils, individual manufacturers, jobbers and retailers are being urged to readjust prices with a view to business resumption. Division of available jobs is suggested, together with part time rotation methods in regard to both private and public work. On the one hand, it is suggested that manufacturers produce for stock so far as is possible, while on the other, labor is urged to take its share of reduced prices in order to stimulate active construction.

In general the methods suggested are good. The only wholesome way to deal with the problem is on a decentralized basis and many methods have been suggested which if put permanently into effect will do much toward preventing further periods of unemployment. Attention should be called at this

time, however, to the government's responsibility in meeting the problem as well. High taxes bearing with especial weight upon producing capital have done much to slow down business. The tax revision measure is still being held up by Congress. This is a question of even greater importance than the institution of enormous road building and other construction projects and the country has a right to expect constructive legislation which will open up inducements for investment in new enterprises.

Orient Pushing Power Development

Future Markets for Electric Labor Saving Devices Seen by American Manufacturer as the Result of Present Construction

Japan is pushing work on hydroelectric development as the demand for power in the larger cities as well as the smaller villages is far in excess of the supply available, according to Stephen Q. Hayes, a special electrical engineer of the Westinghouse Electric & Manufacturing Company, who has just returned from a six months' tour of the Orient.

As the demand for light and power in the large cities is at present so greatly in excess of the available supply, rates are high and the distributing companies have not encouraged the use of electric heating appliances and household utensils. Contemplated extensions to the power companies' systems will be completed within the next few years, however, when there will undoubtedly develop a wonderful market for electric cooking and heating.

Similar activity is reported from India and China. On the west coast of India electrification of the cotton mills centering about Bombay has taken place in conjunction with the construction of a large hydroelectric system. The jute industry near Calcutta is reported to have under way several central power schemes and throughout the country there is a large increase in the number of installations of electric lighting systems. A representative of the Pelton Water Wheel Company has recently made the trip to Calcutta on one such power project.

Four electrical undertakings have recently been registered with the Chinese Ministry of Agriculture and Commerce, namely, the Shou-shing Telephone Co., Shou-shing, Chekiang; the Jui-An Electric Light Plant, Sui-an, Chekiang; the Chowshan Electric Co., Chowshan, Chekiang; and the Sun Fong Electric Co., Kiangsu. Other electric companies that have been organized are the Yau Tai Electric Light Co., at Tai Hsin, Kiangsu, and the Sing Yang Electric Light Co., of Sing Yang, Honan.

Chen Yi-hee, president and organizer of the Sunning Railway, is reported to be organizing a company with \$2,000,000 capital to develop a water-power project near the town of Sunning. As was the case in the construction of the Sunning Railway, it is proposed to secure the money for this water-power enterprise from former residents of the Sunning district who are now living in the United States. As soon as the necessary capital has been fully subscribed, it is planned to place contracts.

Letters to the Editor

Oregon Contractor-Dealer Approves of Stand on National Organizations

To the Editor:

Sir: Allow me to congratulate you on your stand as outlined in "The Province of the National Organization," in the September 15th issue. We believe that such a body as the Contractor-Dealers can no longer be handled entirely from an eastern office. Association men must get together, and because of the great physical and geographical separation it seems best that the Pacific Coast maintain a district of its own that can be the foundation for larger central units.

When Bill Goodwin began his work with a view to enlarging the National Association, he thought that the National membership should number twenty or twenty-five thousand instead of the twelve or fourteen hundred members which the National had on its rolls at that time. When we compare the membership of the National Association with the Contractor-Dealer state membership on the Pacific Coast and find that we comprise between twenty and twenty-five per cent of the National membership, it seems plain that the National is not meeting the great need of the Contractor-Dealer in the East as well as the West. If the National membership in the East, in the densely populated sections meant to the electrical industry there, what Pacific Coast organization means to the industry here, we believe that the East would be as well organized in proportion as the West. We therefore appreciate the publicity which you have given to the Pacific Coast dealers.

B. W. PAUL.

Paul's Electric Store, Medford, Oregon.

Holds That Secession by the Pacific Coast Contractor-Dealers Is Mistake

To the Editor:

Sir: I have read your editorial in the September 15th issue, entitled "The Province of the National Organization."

If there ever was a need for straight thinking, it is right now. No one is stronger for California and the Pacific Coast and the citizenship there represented in the electrical industry than your humble servant, but I am firmly convinced that the tendency toward isolation and the go-it-alone attitude which is being assumed by the industry on the Pacific Coast is going to have a very detrimental effect in future years. I am always proud to see California in the foreranks of any sound, progressive movement, but there is hardly a day goes by that I am not compelled to defend California's position because of the insistent determination of most Californians to constantly present the idea that "conditions are different on the Coast." As a matter of fact, they are no different there than any place else. They may be ahead of the procession in some things, but in many other things they are far behind in the procession, and since they are striving to make progress in an industrial way, they should bear this point particularly in mind. California needs a large increase in desirable citizenship and an everlasting flow of new capital to develop her resources, and when we realize the highly temperamental nature of people and how easily a psychological fact reacts, we should bear in mind that there is a danger always of an unfavorable reflection reacting toward the detriment of the very thing we are all trying to bring about—viz., the upbuilding of western industry.

Are we not likely to have in the development of commercial policies exactly what we have gone through in the lack of standardization of products and engineering practice?

There is need for a united nation electrically as well as every other way, and I hope your usual straight thinking will have this point uppermost, as being the most important contribution to the development of the whole electrical industry for every part of the continent.

W. L. GOODWIN,

Assistant to the President.
Society for Electrical Development, Inc.

Los Angeles Furniture Industry Is Said to Produce \$19,000,000 Annually

To the Editor:

Sir: In a recent article in the Journal of Electricity and Western Industry the statement was made that the value of the product produced yearly by the furniture manufacturing plants in Portland totaled \$6,000,000.

We are attaching hereto a booklet descriptive of Industrial Los Angeles and would call your attention also to the attached sheet which shows the manufactured products of Greater Los Angeles for the year 1920. You will notice under the caption of furniture that our local manufacturing plants in that line produced product valued at over \$19,000,000, with a capital investment of over \$10,000,000 and a weekly payroll of close to \$115,000.

It would seem to us, therefore, on reading your article that it could hardly be said that the furniture industry of the Pacific Coast was centering around Portland.

Every type of furniture is made in Los Angeles, from the inexpensive wickerware to the very finest period furniture. Only last year, Los Angeles secured two new furniture plants devoted entirely to the manufacture of period furniture. These plants have brought to Los Angeles, Italian woodcarvers who carve by hand the beautiful pieces which are turned out.

During the recent Market Week, a very favorable comment was made on the part of furniture buyers all over the twelve western states, who noted with pleasure that Los Angeles was not only making a great variety of furniture, but that her styles, her finish and the whole makeup of her furniture was equal in every respect to the finest eastern furniture.

We feel very proud of this large industry and of the men who operate it who are exceedingly capable and wide-awake.

FRANK WIGGINS.

Secretary.

Los Angeles Chamber of Commerce.

Urges Caution in the Description of Electric Appliances to Avoid "Come-backs"

To the Editor:

Sir: An article appeared in the August 15th issue of the Journal of Electricity and Western Industry that might well be commented upon. It is a rather insignificant statement and aside from the main point of the article, but it illustrates the little things that mean lack of cooperation between different branches of the industry, and lack of understanding of the problems confronting each branch.

Cooperation in theory is easy, and has been successfully accomplished. Cooperation in practice is hard because it consists of the small points that may be easily overlooked. As with salesmanship, the viewpoint must be that of "the other fellow."

"And the transformer will scarcely turn the meter, so operating cost is absolutely unnoticeable," is the statement

regarding the bell transformer appearing under the heading, "Bread and Butter Business For the Active Electrical Dealer." Surely this is a minor point for producing sales, as compared with the wonderful convenience and satisfactory operation of all reliable equipment for electrical use. Whether minor or not, it is a boomerang that circles about and strikes back at the very persons that propagated it. Ultimately the dissatisfied consumer will doubt the statements of the next dealer with whom he comes in contact.

For the jobber's salesman says it will "scarcely turn the meter," and the electrical dealer or his representative adds a little local color and says, "It will not turn the meter." The purchaser has one installed, and the better it works, the quicker he forgets it. Shortly the power company has a complaint of creeping meter to investigate. The consumer has no idea of the amount being registered on the meter, and that it takes about three thousand turns of the disc to register one kw-hr. on the dial. He only knows that the meter turns when his lights are off. Why? Because the bell transformer will turn one meter when it will not turn another.

An investigation of such complaints and the finding of a small load on the meter calls for the question, "How does your doorbell operate, from dry cells?" Invariably the answer is, "Why, no, I have a bell transformer, but that can't do anything, they told me it would not turn the meter."

Then the complaint man must be a true diplomat, or a dissatisfied customer results for both power company and contractor-dealer.

C. B. MERRICK,
Inspection Dept.

San Joaquin Light & Power Corporation.

Westerner Sends Interesting Clipping About Proposed African Development

To the Editor:

Sir: I am enclosing herewith a clipping from the New York Sun which I thought might interest you. California has been accused of dreaming about transmission lines 1500 miles long. We are pikers; here is one 4000 miles long—maybe!

"Transmission of sufficient motive power from Africa to drive all the trains, light all the towns and run all the factories of Europe is the aim of a scheme described here by the Belgian engineer F. Anderheggen in the National Belge.

"The Congo River in Africa, said the originator of the plan, discharges at least 80,000 cubic meters of water per second from the Stanley Pool over the Livingstone Falls.

"Two hundred million horsepower is thus wasted, said Mr. Anderheggen, who suggested that this vast mass of water force should be carried through pipes under high pressure into electric generators in the Lower Congo.

"Thence in the form of high tension electric current this vast power would be sent to Europe, along the Atlantic coast, through Senegal and Morocco and beneath the Strait of Gibraltar.

"Carried over a distance of some six thousand kilometers, the power originally available at the source would suffer a loss of fifty per cent, but enough would still remain for the haulage, lighting and factory power requirements of Europe, he asserted.

"This scheme, says its daring originator, is no more Utopian than the Panama Canal scheme. First, there is plenty of native labor available in the Congo. Second, the cement, iron, copper and other requirements are no more difficult to obtain for this purpose than for that of railway building.

"Proportionately, the job would cost no more than the

railway that is going to link up Leopoldville and Katanga. Less time would be required for this job than was needed for cutting the Panama Canal."

J. H. ANDERTON.

Stone and Webster, San Francisco.

Appreciation of Journal of Electricity's Study Course in Accounting

To the Editor:

Sir: Before the gradual reawakening to better methods, the average contractor looked upon the keeping of systematic and accurate accounts as a matter incidental to his business, hence in too many cases, any sort of records seemed to satisfy. In a large majority of cases, this attitude has been entirely changed due to a number of reasons of which two may be emphasized:

First: The necessity of adequate and correct income tax reports have made it obligatory for dealers to keep more accurate records than heretofore, and to concern themselves more definitely with the expenses and income of their business.

Second: The bankers throughout the country have been putting increasing emphasis on the character of accounts their clients keep, and are more largely influenced in granting credit by the care and exactness with which clients' accounts are kept, as shown by the statements presented when requesting credit.

As a result of the above cited reasons, practically every dealer at the present time is making some effort to improve the financial side of his business. From an accounting and financial point of view, dealers may be classified as follows: First, those having inaugurated a complete and efficient system of accounts handled by a staff or individual well trained in bookkeeping methods. Second: Dealers having a system which although imperfect in some details gives reasonable satisfaction as to accuracy and ready arrangement for analyses of costs and profits. Third: Dealers having an unsatisfactory system of accounts. In the propaganda work which has been conducted, no attempt has been made to interfere with the first-class dealer. It has been found somewhat difficult to secure the attention and cooperation of the dealers of the second class because with reasonably satisfactory results, the attitude is often assumed to "let well enough alone." In the case of the third class of dealer, it is difficult to obtain admission that his books are open to criticism, perhaps due to the feeling that an admission of fault might injure his credit standing.

In attacking the problem of better dealer accounting methods, it is necessary to secure the dealer's attention and confidence so that he will admit and finally seek assistance.

The trade papers have so well sold the idea to contractor-dealers that it is safe to say there are few electrical dealers uninformed of the standard system. However, as often happens in the conduct of publicity work, unless readers become interested to the point of definite action, the chances are good that printed propaganda will be read, approved perhaps, but then forgotten or left to another day.

It is believed that the methods now being carried on by the Extension Division of the University of California through its correspondence course is one of the best media that has been tried to date. This course is thorough and unusually clearly written. It is full of vital interest and any dealer who is interested sufficiently to start reading the course may well be stimulated to carry it through to completion, thus it should only be a short time before a high percentage of dealers use the standard system.

A MANUFACTURER.

Massachusetts.

Builders of the West

A contemporary writer in discussing the people of Oregon, where American civilization on the Pacific first took root, describes them as being a mixture of cautious conservatism and unafraid daring. He pictures them as pursuing the even tenor of their ways with easy-going indifference, but building through the years solidly and substantially, enduring political and commercial structures. The business men of Portland, the commercial and financial capital of the state, have long been known for traits of community spirit and intelligent foresight.

E. L. Thompson, vice-president and manager of the Portland Woolen Mills, a western-born man, the son of a pioneer of '47, and one of the outstanding figures in the commercial life of the state, exemplifies this spirit of service to the community.

That the excessive turnover of American labor is one of the most flagrant examples of industrial waste in this country today and presents a problem commanding the thought and consideration of our most able leaders in labor and industry is universally recognized.

Because of the treatment of his employes and his realization that behind every payroll stands a human being, Mr. Thompson has had the satisfaction of knowing that his labor turnover has been negligible and that there has never been a strike or labor disturbance of any kind, nor a single day's shutdown for want of work in the history of the mill. He also has the pleasure of seeing on the front of a \$30,000 employes' clubhouse (a gift of the company), a bronze tablet placed there by the mill employes and dedicated to their "friend and co-worker, E. L. Thompson."

Mr. Thompson began his commercial career in his father's manufacturing plant in Albany, Oregon, where he continued in business for 12 years, moving to Portland in 1892. Here he was engaged as fire insurance adjuster and auditor for the North British Mercantile Company for several years until he went



E. L. THOMPSON

Vice-president and manager of the Portland Woolen Mills, whose successful manufacturing enterprise stands as an enduring monument to the successful solution of industrial labor problems.

into partnership with J. L. Hartman, organizing the banking firm of Hartman & Thompson, in which firm he still takes an active part. In 1903 he organized the Portland Woolen Mills with a capital of \$50,000. The mills have continued under his management and today represent an invested capital of approximately \$1,000,000, have a yearly output in excess of a million yards, a payroll of 500, and are the largest woolen mills in the West.

Mr. Thompson is also interested in agriculture and for a number of years conducted a certified milk plant with imported Guernsey milk cows, making the business pay and grow constantly under his direction until it became such a large unit that he was compelled to dispose of it. He has also devoted considerable time to civic development and is president of the Rose City Park Association and the Parkrose Association, which city additions have proven very successful both financially

and as a city unit. In addition he is president of the Willamette Valley Irrigated Land Company where several thousand acres of land have been brought under irrigation, but his one hobby is the Portland Woolen Mills. Upon assuming the management of the Portland Woolen Mills, shortly after its organization, he knew nothing of the technical process of manufacture but realized that the controlling element in production was the human factor. His success in the solving of this problem symbolizes an ideal carried to fruition. He takes particular pride in the fact that the employes as a unit are perhaps more harmonious than any like organization in the country. The quality of Oregon wool is of the best and this plant, being located close to the source of production and having no internal labor troubles, has spread the fame of Oregon wool products.

So, to E. L. Thompson, manufacturer, for his signal success in the solution of labor problems and promotion of community welfare, this issue of the Journal of Electricity and Western Industry is affectionately dedicated.

Proposed Five Hundred Million Power Bill For California

Complete Text of the California Water and Power Act Providing for State Controlled Power Development, with Annotations by Robert Sibley, Editor of the Journal of Electricity and Western Industry

Section 1. It is hereby declared to be the policy and purpose of the state to conserve, develop and control the waters of the state for the use and benefit of the people.

This proposed enactment will in all probability be placed as an initiative measure upon the ballot of November, 1922, for the citizens of California to pass upon. It has many outstanding excellent features. Among other things it recognizes the necessity for development of California's water power and irrigation resources on a vast scale, which is commendable. However, in the means whereby it proposes to accomplish this development and in the neglect to tie in harmoniously with California's present wonderful accomplishments in development of its water powers it unquestionably fails.

Thirty years of pioneer effort in California in which this state has led the world has attracted investments of nearly a billion dollars in hydroelectric securities. This effort has brought about the installation of transmission lines and the construction of power plant equipment that today in efficiency and vision is not surpassed elsewhere. The proposal attempts no harmonious utilization of either the individual vision of these pioneers or their physical accomplishments, save only in emergency instances, thus endangering public utility institutions in this state now operating under rigid state regulation and of a value of approximately a billion dollars. If the state's resources are to be called upon to further hydroelectric development, we should by all means proceed in some way to take full advantage of this present vast outlay in investment and not attempt to disrupt and inject a completely inharmonious plan of development.

Sec. 2. The California Water and Power Board, hereinafter called the board, is hereby established, composed of five members who shall be appointed by the governor, one of whom he shall designate as chairman and executive officer, who shall devote all his time to the duties of the office. The members shall be qualified electors of the state and shall be so appointed as to be fairly representative of the state geographically and of its irrigation and municipal interests. Members shall hold office for four years, except that of those first appointed, one shall hold office until January 1, 1924, one

The term of service on this Board is for four years. Their powers are practically absolute. If funds are not available to pay bond principal or interest they may dip into the state's funds, as set forth in Sec. 9, and even add to the tax rate. No legislature can stop them in their work. Not even the Governor. These five men would indeed be monarchs of all they survey, checked only by the more or less capricious functioning of the recall. On the other hand, think of political appointments of only four years' standing, with the turmoil and upheaval in a business venture of five hundred million dollars that will occur every four years when party administrations change! Business and politics do not mix. If we are to develop our wonderful state resources under state backing, let us forever free the movement from politics.

until January 1, 1925, one until January 1, 1926, and two until January 1, 1927. The chairman shall receive a salary of fifteen thousand dollars per annum. The other members shall receive a per diem of twenty dollars while engaged in the performance of duty and all members shall receive their necessary expenses. The legislature may increase their compensation. Each member shall execute to the state such bonds as the governor may require. The legislature shall have power by a two-thirds

vote of all its members to remove any one or more of the members of the board from office for dereliction of duty or corruption or incompetency; and it shall be the duty of the legislature to provide by law for the removal of members by recall, following so far as pertinent the provisions of Article XXIII of the constitution, except that a successor of any member recalled shall be appointed by the governor for the unexpired term, as shall be done in the case of a vacancy otherwise arising. A majority of the members shall constitute a quorum for the transaction of business and no vacancy in the board shall impair the right of the remaining members to exercise all powers of the board. The board shall maintain its office at Sacramento.

Sec. 3. The board shall have power:

- (a) To acquire by purchase, lease, condemnation, gift or other legal means, land, water, water rights, easements, electric energy and any other property necessary or convenient for the purposes of this article, and likewise to acquire, and also to construct, complete and operate, works, dams, reservoirs, canals, pipe-lines, conduits, power houses, transmission lines, structures, roads, railroads, machinery and equipment, and to do any and all things necessary or convenient for the conservation, development, storage and distribution of water, and the generation, transmission and distribution of electric energy. No electric energy shall be purchased by the board at a price to exceed one half of one cent per kilowatt hour at the power plant, based upon a fifty per cent load factor, except for standby service as provided in Section twelve hereof;
- (b) To purchase, acquire, produce, manufacture or otherwise provide facilities, materials and supplies, raw or finished, and any property or thing necessary or convenient to the accomplishment of the purposes of this article;
- (c) To supply water or electric energy or both to the state, political subdivisions and other users, and, subject to the provisions of this article, to prescribe the terms of contracts, and fix the price thereon and collect the same;
- (d) To use the waters and the lands of the state, or any material therein or thereon, and to require the reservation from sale or other disposition of such lands and material as, in the opinion of the board, will be required for the purposes of this article;
- (e) To require the reservation of water from appropriation for such periods as it may provide;
- (f) In the name of the state to apply for and accept, under the provisions of the laws of the United States or of any state, grants, permits, licenses and privileges in the opinion of the board necessary for the accomplishment of the purposes of this article;
- (g) To cooperate and contract with political subdivisions of this state, and, with the approval of the governor, with the United States and other states, concerning the conservation and use of interstate and other waters and the generation and use of electric energy and the acquisition, construction, completion, maintenance and operation of works necessary or convenient for the accomplishment of the purposes of this article;
- (h) To acquire or construct for political subdivisions distributing systems for water or electric energy bought from the state, upon terms that, in the opinion of the board, will repay to the state within twenty-five years the cost thereof with interest. The title to or interest of the state in such systems shall vest in the political subdivision when paid for;
- (i) To sue and be sued, and to exercise in the name of the state the power of eminent domain for the purpose of acquiring any property, or the use or joint use of any property, deemed by the board necessary for the purposes of this article;
- (j) To provide itself with suitable office and field facilities, and to appoint, define the duties and fix the compensation of such expert and technical officers, legal and clerical assistants and other employees as it may require, subject to such civil service regulations as the board may provide;

Not only in power development but in many other lines such as agriculture and mining, vast sums of money are involved in privately owned development enterprises which are rendering their quota toward upbuilding California and the West. This article empowers the Board to seize any part of these enterprises with no consideration given as to how the particular enterprise or industry may be crippled or dismembered by the exercise of this clause of seizure.

Surely in this day and age where co-operation is recognized as the very basic element in human progress, there are far broader and more statesmanlike proposals possible so that all the good features of private initiative and enterprise could be capitalized in order to further our state development in addition to the utilization of the five hundred million dollars of new money called for in this proposal.

- (k) To define projects and to adopt rules and regulations to govern its activities;
- (l) To exercise all powers needful for the accomplishments of the purposes of this article and such additional powers as may be granted by the legislature.

Sec. 4. The California Water and Power Finance Committee, herein called the committee, is hereby established, composed of the governor, controller, treasurer, chairman of the Board of Control and chairman of the California Water and Power Board, all of whom shall serve thereon without compensation. A majority of the committee shall constitute a quorum for the transaction of business.

Sec. 5. Bonds of the State of California, not exceeding the sum of five hundred million dollars, may be issued and sold from time to time to carry out the purposes of this article, and the full faith and credit of the State of California is hereby pledged for the payment of the principal of said bonds as the same mature, and the interest accruing thereon as the same falls due.

Sec. 6. Bonds herein authorized shall be serial bonds, payable in not more than fifty years from date of issuance, and shall be in such form or forms and denomination or denominations, and subject to such terms and conditions of issue, conversion, redemption, maturities, payment, and rate or rates of interest, not exceeding six per cent per annum payable semi-annually, and time or times of payment of interest, as the committee from time to time at or before the issue thereof may prescribe. The principal and interest thereof shall be payable in United States gold coin. Said bonds shall be signed by the treasurer, and countersigned by the governor by his engraved or lithographed signature and the great seal of the State of California shall be impressed thereon; all coupons thereto shall be signed by the treasurer by his engraved or lithographed signature. The board shall pay, from funds available to it, the expense of issuing and selling such bonds and the necessary expenses of the committee in connection therewith.

Bonds herein authorized may from time to time first be offered at not less than par as a popular loan, under such regulations prescribed by the committee from time to time, as will in its opinion give the people as nearly as may be an equal opportunity to participate therein; but the committee may make allotment in full upon applications for smaller amounts of bonds in advance of any date which it may set for the closing of subscriptions and may reject or reduce allotments upon later applications and applications for larger amounts, and may reject or reduce allotments upon applications from incorporated banks and trust companies for their own account and make allotment in full or larger allotments to others, and may establish a graduated scale of allotments, and may from time to time adopt any or all of said methods, should any such action be deemed by it to be in the public interest; provided, that such reduction or increase of allotments of such bonds shall be made under general rules to be prescribed by said committee and shall apply to all subscribers similarly situated. Any portion of the bonds so offered and not taken may be

otherwise disposed of by the committee in such manner and at such price or prices, not less than par, as it may determine. The committee may cancel any of the bonds so offered and not taken and reissue them in different denominations.

Sec. 7. Bonds herein authorized shall be issued and sold only for the acquisition of such property and rights, and for the acquisition, construction, development, completion, operation and maintenance of such projects as the board may deem necessary or convenient to the accomplishment of the purposes of this article; Provided, that from time to time upon written requisition of the board the committee shall issue and sell bonds not exceeding in the aggregate five million dollars, the proceeds of which shall be placed in the Water and Power Revolving Fund in the state treasury, which fund is hereby created, to be used by the board for the purpose of defraying its expenses, acquiring property, rights, facilities, materials and supplies, carrying charges during construction and meeting other costs incurred in carrying out the purposes of this article: Provided, further, that if at any time the revenues from projects shall be insufficient to pay the interest on and principal of outstanding bonds as the same fall due, the committee, with the consent of the governor, in order to avoid appropriations from the general fund and resulting taxation, may issue and sell bonds to provide funds to make such payments of interest or principal.

Except as otherwise provided in this article, the committee shall issue and sell bonds only upon the written requisition of the board stating the amount of money required and the purpose for which it is to be used and accompanied by a duly authorized certificate of the board describing the property or rights to be acquired or the project proposed, and stating the estimated cost thereof and showing the same to have been investigated and approved and in the case of a project, that plans and estimates therefor, a copy of which shall be annexed to such certificate, have been prepared and adopted by the board and further certifying that, in the opinion of the board, the revenue from the property or rights to be acquired or from the proposed project, together with available revenues from other projects, will be sufficient to pay within fifty years in addition to other necessary expenses, the interest and principal of the bonds requested to be issued. The proceeds of the sale of such bonds shall be placed in the treasury and shall be used by the board exclusively for the purposes for which the same were issued.

Sec. 8. The board shall establish such rates for service as in its judgment will provide, in addition to the expenses of operation, maintenance, depreciation, interest, insurance and reserve for losses, funds to pay the principal and interest of all bonds issued under this article, as the same fall due, together with all sums which may be advanced from the general fund and interest thereon as herein provided.

Each project, as the same may be defined by the board, shall be charged by the board with its cost, which shall include its proper share as fixed by the board of all expenditures from the Water and Power Revolving Fund and the share so charged shall be credited to such revolving fund which shall be replenished, to the extent of the amount so credited, from the proceeds of bonds sold to provide funds for the cost of such project. The board shall establish such rates for the service furnished by each project as in its judgment will pay, within fifty years, such cost thereof, and the expenses of operation, maintenance, depreciation, interest, insurance and reserve for losses; provided that where the rates are intended to provide for the repayment of expenditures made in acquiring or constructing distributing systems for political subdivisions, they shall be so fixed as in the judgment of the board will repay the amount of such expenditures with interest within twenty-five years. The board may change rates when in its opinion advisable to meet changed conditions and shall always keep its rates as near the amount required to pay such cost and expenses as practicable, and shall fix similar rates under substantially similar conditions.

Sec. 9. All revenues of the board, except proceeds from the sale of bonds, shall be paid into the state treasury and shall be applied first to payment of the expenses of the board, costs of operation, maintenance, depreciation, insurance and losses, and second, to the payment of interest on and principal of said bonds.

If at any time the moneys in the state treasury applicable to the payment of interest or principal of said bonds, shall be insufficient to pay the same as it falls due, moneys shall be temporarily advanced from the general fund for that purpose, and there is hereby appropriated from the general fund in the state treasury such sum annually as will be necessary to pay such interest and principal, and there shall be

collected each year in the same manner and at the same time as other state revenue is collected such sum in addition to the other revenues of the state as shall be required to pay the sums appropriated for payment of interest and principal as herein provided, and it is hereby made the duty of all officers charged by law with any

Note carefully the unlimited power of appropriation from public funds granted under this section. The proponents of this bill claim no additional taxes will be necessary under this five hundred million dollar enactment. Of course this is true if everything goes well and smoothly. There have, however, been many instances of record where public enterprises have not proven successful. What may then happen with this unlimited power of appropriation of public funds and extra calls upon the tax payers of the state?

duty with regard to the levy and collection of said revenue to do and perform each and every act which shall be necessary to collect such additional sum.

All moneys paid from the general fund in the state treasury for principal of or interest on such bonds shall be returned into said general fund out of the revenues of the board as soon as the same become available, together with interest thereon from the several dates of such advances until so returned at the rate of six per cent per annum compounded semi-annually.

Sec. 10. Out of any money in the state treasury not otherwise appropriated, the sum of two hundred and fifty thousand dollars is hereby appropriated to be credited to the board and an equivalent amount shall be returned into the general fund in the state treasury out of the first moneys available in the Water and Power Revolving Fund.

Sec. 11. The committee may establish such funds in the state treasury as in its judgment may be required to carry out the purposes of this article.

Moneys herein provided for the board shall be drawn from the treasury by warrants of the controller and demands made by the board and allowed and audited by the State Department of Finance.

The board, the controller, the treasurer and the committee shall keep full and particular account and record of all their proceedings

This gives state and political subdivisions preferred uses of power sites as against privately owned companies. In view of the fact that privately owned power companies are all under rigid state regulation and are in the nature of institutions serving cities and communities, it would seem that this is an unwise discrimination.

under this article, and shall transmit to the governor annually a report thereof, not less than one thousand copies of which shall be printed, to be by the governor laid before the legislature bi-annually, and all books and papers pertaining to the matters provided for in this article, shall at all times be open to the inspection of any officer or citizen of the state. All accounts of receipts and disbursements shall be audited annually by the State Department of Finance.

The state and political subdivisions shall have a preferred right to water and electric energy controlled by the board as against privately owned public utilities selling water or electric energy to the public and no contract or act of the board shall interfere with such preferred right. As between those otherwise equally entitled, the board shall supply water or electric energy to political subdivisions near the source of supply, to the extent of their reasonable needs, in preference to more remote users.

The board shall not supply water to a privately owned public utility for the production of electric energy and shall not supply directly or indirectly to privately owned public utilities which sell electric energy or water to the public more than twenty per cent of the total amount of electric energy or water under its control, and contracts therefor shall not extend over a longer period than five years, or be renewed before one year prior to their expiration. Before making or renewing such a contract, the board shall publish a notice of its intention so to do at least six days each week for a period

of sixty days in at least one newspaper published and circulated in this state and designated by order of the board for that purpose; and at least thirty days' prior notice shall be mailed to the legislative bodies of all counties and incorporated municipalities and to irrigation districts situate within the territory which, in this opinion of the board, may use such electric energy. Public utilities taking such contracts shall be required to provide the board with standby service at reasonable rates.

Sec. 13. Nothing contained in this article shall prevent any political subdivision itself, or in cooperation with other political subdivisions, from developing any water or electric energy owned or controlled by it; but plans for any

Cooperation is here assured between political subdivisions. If we are really going to have cooperation, and surely every forward-looking citizen desires it, let's have it in such a way that private initiative, private enterprise and present day investment may be combined in a broad constructive way with the bonding power of the state to make the fullest development possible without duplication of effort. There is an opportunity in this great West of ours to harness our wonderful water power resources, but while proceeding to do it, let's do it in a constructive, harmonious manner, taking fullest advantage of what thirty years of pioneer development has brought us and by whatever means we employ, let us bring harmoniously into use every asset at our command, and above all relieve the situation from the whims and caprices of political control.

such development hereafter proposed shall be submitted to the board for suggestions and criticism, so that the cooperation of the board may be secured, if practicable, for the fullest development of the proposed project. The board may acquire and develop any such project unless the political subdivision claiming the same shall have adopted plans and estimates for the development and authorized bonds to cover the cost thereof, or shall do so, within two years after the board shall have notified such political subdivision of its readiness to proceed with such development.

Sec. 14. In any proceeding in eminent domain brought by the board under the provisions hereof, the determination of the board that the taking of the property described in the complaint is necessary for the purposes hereof, shall be conclusive evidence of such necessity. In any such proceeding the state may take immediate possession and use of any property required for the purposes of this article, by paying into the court such amount of money as the court, upon five days' notice to the adverse party, may determine as reasonably adequate to secure to the owner of the property sought to be taken immediate payment of just compensation for such taking and any damages incident thereto.

In any such proceeding, trial by jury may be demanded and secured by any party thereto, and any proceeding begun under the provisions of Section 23a of Article XII of this constitution shall be dismissed on the filing therein of a written demand by such party.

Property appropriated to public use may be taken under the power of eminent domain for the purposes hereof, but, except as otherwise herein provided, this article shall not confer power to take the property or works owned or controlled by any political subdivision used or proposed to be used for supplying water or electric energy, or both, without its consent.

Sec. 15. All public officers, boards, commissions and agencies shall make available to the board all data and information in their possession required by the board, and shall render every assistance in their power in carrying out the provisions of this article.

Sec. 16. As far as practicable, consistent with the speedy development of its operations, the board shall so shape its plans as to furnish work during periods of unemployment.

Sec. 17. The term political subdivision, as used in this article, is hereby defined to mean and include any public board, public quasi corporation, public corporation, water district, lighting district, municipal utility district, public utility district, irrigation district, municipal corporation, town, city and county, city or county, having authority to contract for the purchase, sale or use of water, water power, or electric energy, but shall not be construed to include any privately owned public utility.

Sec. 18. This article is self-executing, but legislation may be enacted in furtherance of its purposes and to facilitate its operation.

The New Status of the Jobber in the Distribution Scheme

A Manufacturer's Viewpoint on the Changing Position of the Electrical Jobber With Ideas on What Must Be Done by the Electrical Industry to Combat the New "Factory to Consumer" Movement

By A MANUFACTURER

AS a slogan, "Direct from Producer to Consumer" has found very little application among the large manufacturers until very recently. Yet there has been a growing tendency among some manufacturers to reach the consumer through direct sales efforts, particularly among the food products and dry goods industries. While the movement has not been seriously considered by the electrical industry as a whole, there are even some manufacturers of electrical material who are considering going either direct to the consumer or to the dealer.

This tendency on the part of the manufacturer to ignore the established channels of distribution by eliminating the jobber alone or in some cases both the jobber and dealer, in disposing of his products, can be traced back to the inflated prices of the war period and the depression which followed the sudden termination of the wartime industrial activities. So serious has the problem become that immediate steps must be taken in all lines to curb the movement which promises to eliminate so important an element in the distribution scheme as the jobber.

The reasons for this radical step on the part of manufacturers has been laid at the feet of that type of jobber or dealer who, when prices rose to enormous heights, sold the goods which he had on his shelves for a correspondingly large profit and considered this item as a legitimate return. He failed to consider the inevitable drop, and to place this increase in a "trust fund" or reserve, to cover the losses which he would sustain when prices did decline. Having been either totally or partially unprepared for this drop, he has hesitated in disposing of his goods at a loss and has been holding out for prices which would minimize such a deficit. His action has been natural but it has caused such a discrepancy in the wholesale and retail prices of material that the consumer in many lines has almost refused to buy from the dealer. Hence it is that the manufacturer is adopting new tactics in the disposal of his products. He is jumping over the dam without trying to find a hole in it, when he ignores the dealer and jobber by seeking to place his goods before the public by direct sales efforts.

Electrical Supply Jobber Needed

It has been the established policy in the electrical industry to recognize the supply jobber as the logical agency for the distribution of its products. Leading minds in the industry realize that this is the correct economic principle because of the service the electrical jobbers are furnishing. The tendency to sell either direct to the consumer or the dealer, is becoming so marked, however, that those who are convinced of the desirability of maintaining the job-

ber's status should recognize the necessity for rallying to his support when his status is thus assailed. They should be the first to point out to him the danger of being ultra-conservative in his willingness to cooperate with the manufacturer, and should assist him in combating movements which might result in the opening of factory branches in the distributing center.

Those who argue that a manufacturer can establish a branch for service purposes in backing up a national advertising campaign and can perform at half the cost, the sales and credit functions which the jobber now performs, have an argument worthy of deep thought on the part of the jobbers. Again, there are those who claim that the manufacturer who pays freight to destination is going as far as might be expected without being forced to prepay the charges and thus assume the added burden of carrying what the railroads would otherwise carry and also absorb the item of war tax.

The electrical industry offers the jobber an opportunity, through the educational functions he can perform, and because of the semi-technical character of the business as a whole, to make such a permanent place for himself that he will be secure against those who are endeavoring to popularize the "free market" and the "direct to the public" plans being fostered by some other industries and even some manufacturers in the electrical industry.

What the Jobber Must Do

It would seem that the retail dealer should endeavor by every means possible to improve his service to the public so that his own business might grow and the public be better acquainted with the electrical idea. The jobber on the other hand should not consider himself to be merely a dealer in large quantities, but should, for the adequate protection of his own status, endeavor to take the place of the manufacturer in his community. He should represent the manufacturer's interests and arouse the same degree of enthusiasm among the dealers themselves as the manufacturer would arouse if he were dealing with the retailer direct. This alignment of jobber with manufacturer and dealer with consumer will tend to emphasize the fact that the only essential parties in the distribution scheme are the manufacturer and the consumer, for the first two will work together as one and the dealer's service and sales effort will link him with the consumer. Both jobber and dealer will find it easier to justify their existence.

The foregoing does not in any sense intimate that all jobbers are at fault. To suggest such a thing would be ridiculous, for there are many pros-

perous jobbing houses achieving prosperity by handling a multiplicity of highly popular lines—lines so extensively advertised and otherwise well known as to force the orders upward from the consumer to the jobber. But is this a safe foundation for success in the future? This discussion does not have to do with present successes or failures, but rather seeks to defend the jobbing system, especially in electrical lines, and attempts to view from an unprejudiced angle what many who are more intimately connected with it, may be too close to see.

The jobber should not lose sight of the main issue, which is the permanency of the jobber's business in the economic scheme. He should not permit such things as selling expense, credit risk and margin of profit to divert him, for these are details of his business which respond to good or bad judgment.

The Manufacturer's Position

From the standpoint of the user, the only objection to the jobber is the possibility of increasing distributing costs to the point where they seriously affect prices. Periodical assaults on so-called middlemen's profits in the past have seemed to accomplish very little, but when criticisms against the middleman emanate from such high places as governmental departments, is it not time for those who are responsible for the distribution system to consider possible ways of simplifying or eliminating? It is easily conceivable that a manufacturer, after hearing such criticisms, might look toward an increased volume of factory-to-consumer deliveries as the quickest solution of the problem. The mail order houses are finding little favor among the recognized distributing channels, but is mail order volume decreasing? Free markets may be condemned without a hearing by jobber and retailer, but are they not springing up over night in every town?

The Remedy and the Result

In the electrical industry the jobber is needed and the dealer is needed and both of these branches can profit from the cooperative efforts of the California Electrical Cooperative Campaign and similar bodies in other sections, and so elaborate their present functions that they will become invaluable to the manufacturers and consumers respectively. By doing this they will not only make their position in the economic scheme secure during the years that are ahead, but they will also create so favorable and dominating a position for themselves that they will swing into line all of those manufacturers who have established "direct to consumer" and "direct to dealer" policies, for they will then be able to convince them that such plans are as houses built upon the sand, the hasty recognition of which cannot stand against the tide of better service, better cooperation and more effectual building of industry.

EDITOR'S NOTE: Realizing the vital importance of the position of the jobber on the Pacific Coast, the Journal of Electricity and Western Industry has obtained this frank discussion of his problems from a western manufacturer who is thoroughly cognizant of the situation.

Art and Efficiency in Street Lighting

Harmony, Beauty and Efficiency Mark the Newer Designs of Lighting Standards for Use in Residence Districts

At no time in the history of the electrical industry has ornamental street lighting attracted so much attention. The low prices for materials that enter into modern installations are responsible for the resurrection of old proposals which were pigeon-holed during the last four years because of high prices or scarcity of materials.

The rapid growth in new subdivisions and urban territories has been followed by a demand for adequate street lighting in such districts. Students of art and architecture are cooperating with illuminating engineers, hoping to set a standard of harmony, beauty, and efficiency which will again



White-marble finish on concrete standards makes a beautiful contrast with the green background in a roadway that winds around the slopes of a new wooded residence section.

mark the West as a leader in electrical progression. Newer designs in residential districts are distinctly ornamental by day as well as by night. Simplicity is particularly desirable when the height is limited due to the presence of shade trees. This at once introduces the necessity of lower candlepower at more frequent spacing and when the designs are in keeping with the character of the street an altogether pleasing day and night result is assured.

The enhanced value of the property and the convenience of using the streets and sidewalks after dusk more than compensates for the tax burden resulting from the use of community credit for the purpose of installing street lights.

The impossibility of supplying adequate illumination from pole type or span lighting fixtures on wooded streets had long been obvious and is at last admitted. Ornamental standards on series circuits with compensators and specially designed fixtures are recognized as the best and cheapest for securing satisfactory illumination. It is reported that there is, in prospect and under construction in the cities in the Southwest, a total of \$2,000,000 for ornamental street lighting. The population in the territory covered by this estimate is 1,500,000.

Indication of Improvement in Western Business Conditions

**Although Purchasing Power of Agricultural Interests Has Been Increased
Uneven Decline in Prices of Commodities in General Still
Prevents a Return to Active Business Conditions**

By NORMAN S. GALLISON

Associate Editor, Journal of Electricity and Western Industry

ANY condition of business or finance is always relative. Therefore to appreciate properly present day problems a short survey of the period since January 1st, 1920, would seem essential. At the beginning of 1920 bankers who had been accustomed through long experience to an orderly liquidation of their heavy and unusual loans at the turn of the year, the natural result of the marketing of harvests, found their pouches bulging with practically the largest amounts in loans ever carried and no prospect of immediate payment or a marked reduction within any reasonable time. We had much discussion of "frozen credits." We had a price level of wholesale commodities at 240 or 140 points above 1913.

This price level went up to over 260 in May, 1920. The general public and bankers were apprehensive and all hoped for an orderly decline in prices over an extended period. The Federal Reserve Banks were down almost to their legal limit. Financiers viewed with some concern the harvesting, transportation and marketing of the year's crops as a further burden on the already over-taxed banking machinery of the country.

Briefly it was a gloomy picture. As is now known, there was no orderly lowering of prices. Practically all commodities started down with a rush and in less than twelve months we had a price level for wholesale commodities at about 140, a decline of over 120 points. No one can properly estimate the tremendous wealth that was thus dissipated in this headlong drop. It was liquidation profound, drastic, almost without precedent.

After such a sensational change every thinking man must be filled with admiration for the enduring strength of the business and financial structure of the United States, that after such a reaction there is so little evidence of dislocation and strain.

Conditions today are far more healthy than at any time within the period of our review. The business of the country is down from the highly inflated price level, and Federal Reserve Banks have only a little over one-third of the amount of bankers' loans and rediscounts in comparison with the high point of 1920.

Fundamental Changes Have Occurred

Throughout the western states there has been a marked improvement due principally to the activity resulting from the marketing of crops, and the movement into consuming channels of the excessive carryover of many commodities.

At the beginning of 1921 a serious situation prevailed in all industries on the Pacific Coast as well as throughout the nation. Due to the precipi-

tate fall in prices and a cessation of demand for their products, canners, packers and most manufacturers were left with heavy stocks in their warehouses upon which storage, insurance and interest had to be paid. In consequence of the price decline which reduced the value of the security, these interests were borrowers to the limit from their bankers. As a result the 1921 pack of canned fruits, fish and vegetables was short of normal. Dried fruit presented a somewhat similar situation. Rice, barley and wheat were all selling below the cost of production.

Our fruits canned and dried are now finding a ready market; beans, barley and wheat are moving; rice is being exported to Japan; canned salmon is now selling at prices which while not high are a great improvement; the timber market is reported good; clothing, wholesale, retail and manufacturing is showing steady signs of renewed vigor.

Further Improvement Is Needed

Although the activity outlined above has permitted the liquidation of loans and has released "frozen credits" to some extent, the heavy capital losses sustained by all branches of agriculture and industry precludes the possibility of an immediate return of active business conditions.

A very uneven aspect now prevails with regard to the price of various groups of commodities. The interchange value between commodities during 1920 at the height of the inflationary period, was about the same as in 1914. The situation today presents some radical changes. Measured in terms of 1913 figures some commodities are selling too high and some too low. The effect is to increase the purchasing power of some commodities and decrease that of others. One commercial interest profits while the other loses. This is a situation which requires rectification. A solid foundation of industrial and commercial activity will not be arrived at until the various commodities sell at about the same level of purchasing power as obtained either in 1913 or at the peak of inflation in 1920.

It would seem then, that the present business and financial activity is to some extent seasonal and does not indicate that the depression is over. Although the bottom may have been reached, the business of the country is still in a depression and there is evidence that liquidation will continue to some extent throughout the year.

The situation today compared with conditions during the past year presents reasons for being optimistic, but this optimism must be substantiated by the greatest industry and application.

Foremanship Training—A Field Often Neglected in Industry

The Neglect in the Training of the "Top Sergeant" in Industry and the Latest Developments of Personnel Work in this Connection Are Explained with Special Reference to the Lumber Industry

By GEORGE H. JENSEN

State Supervisor of Trade and Industrial Education, Olympia, Wash.

FOREMANSHIP training in the lumber industry and in other industries as well, is a very recent departure, having been started during the last few years. This is in reality a tardy recognition of the real part which the foreman plays in industry. In the past, this "top sergeant" in industry has been left to his own resources for real training and growth in his job as foreman. At least this has been the case so far as specific training or means of growth that have been provided by the management, until the advent of foremanship training. This recognition of the part that the foreman plays in industry is based on the fact (no longer a theory) that the foreman is not merely a gang boss working for wages and thinking only of his pay, but the very vital link between management and men. Strange as it may seem, foremanship training has been one of the later developments in connection with personnel work, even though it really forms the foundation, and paves the way for various phases of employment management and personnel work, in addition to better equipping the foreman for his job. There is much conclusive evidence available which would indicate that foremanship training should precede every form or modification of employment management, employee representation, etc., in their various applications.

The average foreman has secured his training in a kind of "fit and try" way. He is a sort of graduate of the school of "hard knocks," and has usually learned the work from the ground up; which, of course, is as it should be, since he needs intimate acquaintance with the work which he directs and supervises. This often results in giving him too much the point of view of the men and he does not readily appreciate the point of view of the management; which, however, as a rule, is not the foreman's fault, because the employer too often has taken no real steps to broaden the viewpoint of the "top sergeant" in industry.

When a man first becomes a foreman he does not always understand the reasons back of orders, directions and instructions which are given him. In his effort to make good it is only natural that he should follow these instructions blindly, for fear that he might be misunderstood if he really tried to discover the reasons back of them, and even here it may be pointed out that the old "hard boiled" method of giving orders still prevails more than it should, the theory being that you can get the best results by having the men afraid of you, or afraid of losing their jobs.

In general, two methods have been employed in connection with foremanship training work. One is

the informational or lecture method, where the foremen are brought together and someone talks to them. The lecturer is usually, although not always, an individual brought in from the outside. This method has much to commend it where the foremen have already had considerable training of a developmental nature.

Methods of Foremanship Training

The second method is the discussion or developmental method where the leader of the group, specially trained in certain phases of personnel work, leads the discussion in which all of the foremen in the group participate; because in this work one of the first steps is to get the foremen individually thinking of their particular jobs and analyzing the various details that go to make up their responsibilities. The advantage of doing this with a group of men instead of working with them one at a time is that they soon discover that the maximum production of the entire plant is dependent not only on the efficient working of their own departments, but on cooperation and team work with the foremen of all of the other departments in the plant.

Foremanship training has been recognized by the Federal Board for Vocational Education as one of the phases of trade and industrial education. Some states have already included foremanship training in the list of activities that go to make up their state program for vocational education. In the state of Washington this work is being done by the State Supervisor of Trade and Industrial Education, and one such course has been put on at the Fisher Flouring Mills in Seattle.

The subject matter in general, as in the case of methods, is of two rather distinct types: one that of foremanship which has in mind the development of a foreman to better perform the duties that have to do with his responsibilities as a foreman.

The other type of content includes work in mathematics, drawing and even machine work, primarily for the purpose of making the foreman a better workman. This latter type of content would indicate that there are foremen who have not come up from the ranks or if they have, they failed to master the details of the department in question. It is with the first type of subject matter here discussed that this article intends to deal.

Results Obtained Have Been Gratifying

Some of the definite results that have been secured by plants that have conducted organized work in foremanship training include the following: Increased quantity of production; development of better production methods; better quality of produc-

tion; better training of green workers; personal development on the part of the foreman; improved morale; decreased turnover of labor; fewer industrial accidents; better cooperation throughout the plant; better personal relations between the foremen and the men.

In order to develop a course for a given plant a careful study of the condition and needs should be made, in order that the course may be of most value to both foremen and management. In this preliminary study, the foremen should be consulted, both as to time and place of meeting, as well as content of the course, and then given an opportunity of expressing themselves as to whether or not they are in favor of having such a course. Compulsory attendance at these classes is never satisfactory.

A Concrete Example in the Lumber Industry

It was the writer's privilege during August of last year to conduct such a course in the Bellingham plants of the Bloedel Donovan Lumber Company. The content of the course was first arranged with the approval of the Industrial Engineer and the General Superintendent. The General Superintendent also arranged for conference of the writer with the foremen and the Plant Superintendents. Their unanimous approval was secured before the course was definitely announced.

This course was planned as a part of the general plan of the shop committee's plan of employee representation. The meetings were held on company time for an hour daily at each plant, but at the end of the first week it was discovered that due to certain rush orders prevailing in both mills only three meetings weekly could be held. However, the men requested that the meetings lost in this way be made up on their own time outside of working hours. These extra meetings were held directly after closing time.

The general "lay-out" of the course was as follows: Supervision of material; supervision of equipment, processes and operations; cost elements of equipment, processes and operations; management of equipment, processes and operations; supervision of the man factor; cost element of the man factor; management of the man factor. Each meeting was carefully planned in detail and carried on through means of discussion blanks. At the conclusion of each session printed matter was handed out to the men. This printed matter pertained to the meeting in question. In order to emphasize the points brought out in the discussion, questionnaires accompanied this text material for the men to fill out as a result of their class discussion, followed by study and reflection later. As a matter of fact, the men were not requested to fill out the blanks, but were told that to do so would aid them in a better mastery of the subjects under discussion. This was all that was necessary. The men filled out the blanks, even though they confided to the leader of the group that it sometimes kept them going until midnight.

Superintendent Flynn, in an article for the Industrial Harmonizer, the official organ of the em-

ployes of the Bloedel Donovan Lumber Mills, said in part as follows: . . . "The foremen in these two groups are studying their jobs, i. e., taking them apart and looking at them as a whole instead of from their personal or individual standpoints, in order to improve their work. Those who have served on the shop committees can appreciate this better than anyone else, because we have all come to realize that when we look at a matter from a personal standpoint we are not always doing the thing which is best for the men as a whole. . . . The instructor simply acts as the leader of the group in studying and analyzing the foreman's job with a view to making a better business team of the entire organization.

"Speaking of teamwork, I am sure that you will agree that a chain is only as strong as its weakest link. Following one of the meetings of the foreman training group this formula was found on the bulletin board: 'Good Management plus Efficient Methods plus Good Men plus Good Supervision equals Good Business Team.' Each and every one has a place in this formula, and if all of us individually and collectively do our share there is no question but that we shall have a business team second to none."

Progress on Government Railroad in Alaska

Two large bridges on the government railroad in Alaska, the Susitna River truss, and the Hurricane Gulch arch have been completed and put in service this season. This brings rail head to milepost 284 from Seward or 170 miles from Anchorage, the head of ocean navigation, and it is expected that the last spike can be driven within the next two or three years at the latest.

The Susitna River bridge at mile 264 has a total length of 1322 ft. and one single span is 504 ft. long. The construction of this large span presented peculiar engineering difficulties because of uncertain foundation for the falsework required for supporting the steel during construction. The plan finally decided upon was to carry out the work during the winter time when the river was solidly frozen over.

The Hurricane Gulch bridge consisting of a single steel arch span of 384 ft. was entirely erected during the pleasant summer weather of Alaska, but is also of interest because of the unusual method involved in its construction. Due to the very rough topography of this section, it was out of the question to begin construction simultaneously on both sides of the arch. It was impossible to get equipment and materials across the gulch. Accordingly, when track had been laid to the south side of the gulch, the south half of the arch was built out on the cantilever principle; materials and equipment for the north half of the structure were then taken out to the end of the south half, lowered 400 ft. to the bottom of the gulch, hoisted thence up the far side where a start was made on a duplicate half of the arch built out, like the south half, on the cantilever principle.

Problems of the Contractor-Dealer in a Rural Community

Overstocking and Consequent Underfinancing Caused by Distance from Sources of Supply, and Quantity Purchases to Take Advantage of Lower Prices Are Common Pitfalls of the Country Dealer

BY F. E. SMALLIDGE

Electrical Supply and Fixture Company, Wenatchee, Wash.

BECAUSE he is usually called upon to perform a variety of tasks ranging from financier to roustabout, the electrical dealer in a rural district has many problems to face.

Perhaps the greatest problem which the country dealer encounters is brought about by the distance from his source of supply. This, no doubt, is responsible for more real problems than any other factor. From it arises a multitude of difficulties which are more or less serious but not insurmountable. The first outgrowth of this condition is the necessity of carrying larger stocks that the dealer may be able to give good service to the trade. In fact, most country dealers find themselves in the merchant class as soon as they have assembled their stocks for business. This brings with it all of the problems of the ordinary merchant, such as the necessity of a reasonable turnover, the increased finances incident to carrying a larger stock, need of accurate accounting and adequate housing facilities for his goods.

Overstocking a Common Mistake

The common pitfalls resulting from these problems are overstocking and under-financing. One of the greatest temptations of the dealer is to buy heavily in order to gain the better prices and the second pitfall naturally follows. Overstocking takes increased capital and a dealer often finds himself with so much money tied up in stocks that a satisfactory turnover is impossible.

It is not always apparent to the dealer that buying in large quantities to take advantage of a low price may cause an accumulation of stock out of proportion to his reasonable turnover. This does not apply in all cases but it does apply when a business is being run on a limited amount of capital and has not a surplus adequate for such investments.

Another problem for the country dealer is the long established custom in rural districts of running monthly accounts, a practice often fostered by the larger mercantile establishments in a community. These accounts often run until the end of the harvest or crop season. A dealer often finds that in addition to the amount of money invested in stocks, he must at least have a like amount invested in book accounts which are attended with the usual credit losses and increased bookkeeping.

Business Should Be on A Cash Basis

It has been a serious problem especially during the period just passed, when most businesses have had a tendency to hew more to the line of a cash business, to determine a method of doing a cash business in electrical contracting. This may not be entirely possible but there is nothing to prevent a definite understanding with the customer before the

work is done as to when and how a bill shall be paid.

The large variety of tasks which the country dealer is called upon to perform is often embarrassing. He must be a good manager, a good estimator, and in a great many cases an accountant, a financier, a mechanic, an engineer, a merchant, business man and a general roustabout. It seems that most country dealer's establishments are promoted by a mechanic, since his qualifications are the first necessary stock in trade. The need for managerial ability rarely occurs to a prospective contractor-dealer in the beginning, and due to this fact a great many of them are forced out of business before they are fairly started. It surely would require a super-intellect to fill with credit all of the positions mentioned, but this contingency is not hard to avoid if given the proper thought in the beginning.

Business Ability is Essential

One of the best combinations possible for the promotion and success of a contractor-dealer's business is a good electrical man associated with a good business man and accountant. Without doubt this will make for better team work than should two electrical men associate together, even though the business man of the firm had never before been engaged in the electrical business. It is too often the case that two electrical men decide to engage in business without first planning how the business management and accounting are to be accomplished. In these instances they will probably travel the well beaten road of learning that there is another side to the electrical business beside the actual mechanic's and theory of the work he sells.

There is no set panacea for all of the problems of the rural contractor-dealer nor is there any remedy that will have beneficial results on any given problem in different localities. However, much can be accomplished through the agency of the cooperative associations and electrical service leagues with the support of the various branches of the industry.

Careful planning on the part of the prospective contractor-dealer fortified with a knowledge of the common mistakes should result in a measure of success. The writer has made every mistake and encountered every problem listed above but has been able to overcome them all to a certain degree and firmly believes that a dealer in the country can afford to maintain an attractive store; that mutual cooperation between the central station company and the Contractor-dealer is an asset to both; that there is no such thing as saturation of a community with any electric appliance and that real stiff intelligent competition is a necessity to the best success of any business.

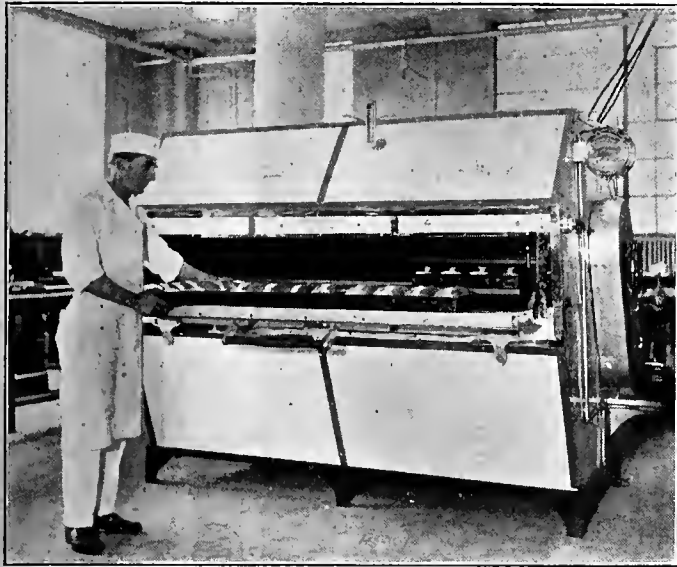
Western Application of Electric Oven

Denver Cafe Demonstrates Commercial Possibilities of New Device for Increasing Production in Bakery Department

BY JOHN M. STRAIT

Industrial Heating Section, Westinghouse Electric & Manufacturing Co.

Sixty-five per cent of all the bread used in the United States is the product of commercial bakeries. The taking over of this household occupation by commercial enterprise, means that baking must more and more come under the laws of business production, namely that increased output by efficient methods means lower costs. Electricity stands ready to solve the problem of the baker just as it has done in hundreds of other industries, despite the fact



Automatic electric oven of the rotating or reel type which has demonstrated the possibility of the application of electricity to the baking industry by the record it achieved in the Hoff-Schroeder Cafe in Denver.

that the baking industry, while one of the oldest, is one of the last to accept this help.

There have been a hundred or more installations of electric ovens in this country and several of those in the West have achieved remarkable records. The showing made by the Hoff-Schroeder Cafe Company in Denver might be cited as an example of what the baker can do in the way of increasing production by the use of an electric oven. The following table gives the average daily production of a Westinghouse automatic oven which supplies one of Denver's largest cafeterias with all of its bread, cakes, pies and pastry.

300 pies of 8 varieties.
125 dozen rolls.
16 assorted cakes.
20 dozen cookies.
20 dozen cup cakes.
7 different kinds of hot bread for dinner and 4 for lunch.
Cream puffs and eclairs.
50 Martha Washington pies.

The oven is a rotating or reel type, the action of which is almost automatic due to the application of a thermostat for controlling the heat supply. Through the regulation of this thermostat any desired temperature can be maintained within the oven constantly for any given period of time, with no watching on the part of the operator. Loading and unloading the oven are the only duties of the baker.

The following table of capacities has been worked out for the oven as an example of what a single oven will accomplish:

Product	Size Pan	No. Per Bake	No. Per Hour
1 lb loaf	4 $\frac{1}{4}$ " x 9 $\frac{3}{4}$ "	136	250
1 lb loaf	4 $\frac{3}{4}$ " x 8 $\frac{1}{2}$ "	120	200
1 $\frac{1}{2}$ lb loaf	5" x 11"	112	160
1 $\frac{1}{2}$ lb loaf	5 $\frac{1}{4}$ " x 9 $\frac{3}{4}$ "	96	150
Pies	10" dia.	56	112

Electrical Capacity of Oven, 25 kilowatts maximum

Included in the points of superiority of an electric oven over a gas type are the following:

(1) Cleanliness, (2) Compactness, (3) Radiation losses less, (4) Quietness in operation, (5) Superior insulation requires less time to heat up, (6) Will bake bread or any kind of pastry without attention, (7) Greatest hourly capacity per kilowatt hour consumption, (8) No watching the thermostat or oven, (9) No juggling gas valves to maintain constant temperature, (10) No steam required, (11) Dependable power and heating equipment, (12) Simplicity of operation reduces the cost of operation as one man can operate four ovens.

State Inspection of Wiring for Oregon

Uniform State Law Being Sponsored by the Oregon Association of Electrical Contractors and Dealers

Work has been started by state chairman J. H. Sroufe, of the Oregon Association of Electrical Contractors and Dealers, to establish adequate state inspection of all electrical wiring, and with this end in view a committee headed by L. W. Going, Chief Electrical Inspector of the City of Portland, has been appointed.

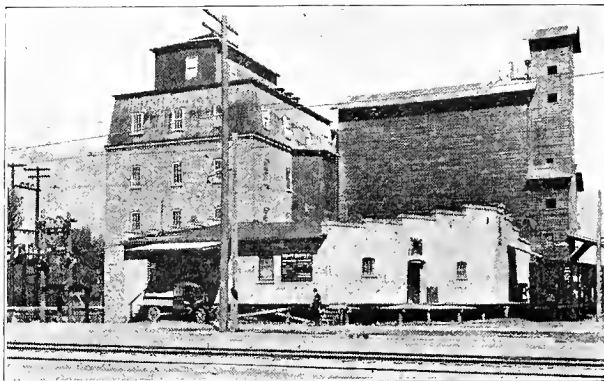
In order to safeguard life and property, reduce insurance rates and insure a reasonably satisfactory installation to the general public, insurance companies have for a number of years insisted that electrical installations should be made in accordance with very definite rules. They, however, have no police powers and if any one desires to ignore their rules, their only alternative is to raise insurance rates. In order to remedy this situation the larger cities and certain states have in recent years adopted a code along the lines similar to those determined by the insurance companies.

A law was passed in Oregon in 1919, prescribing the manner of installation of electrical wires and equipment and establishing rules relating to such installations. The enforcement of this act was placed in the hands of the Commissioner of Labor and a provision was made for raising some revenue to provide for inspection by requiring the payment of a license fee by all electrical contractors conducting business within the state.

Two years of operation under this law have proven that the license fees are entirely inadequate to give satisfactory inspection, and it is with a view to remedying this situation that the electrical interests of the state are undertaking to prepare a bill which will make available sufficient funds so that the law will be made effective throughout the state, either by direct legislative appropriation or by assessing the cost directly against those who benefit by the inspection.

Ogden Flour Mills Produce \$30,000,000 Yearly

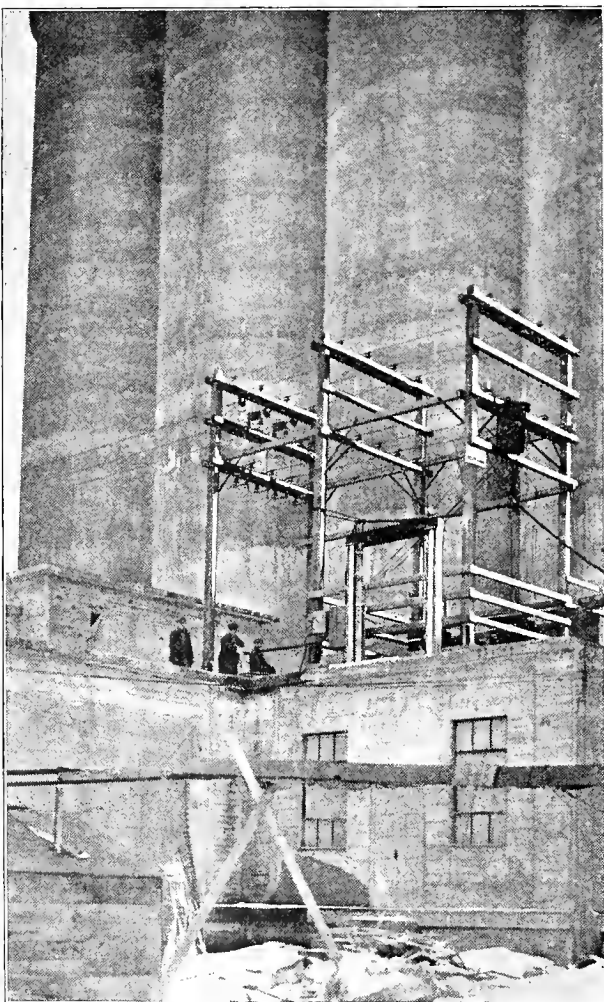
One of a Pictorial Series Featuring Interesting Applications of Electric Service, Advances in Home, Industrial and Power Construction and Noteworthy Developments in Western Progress



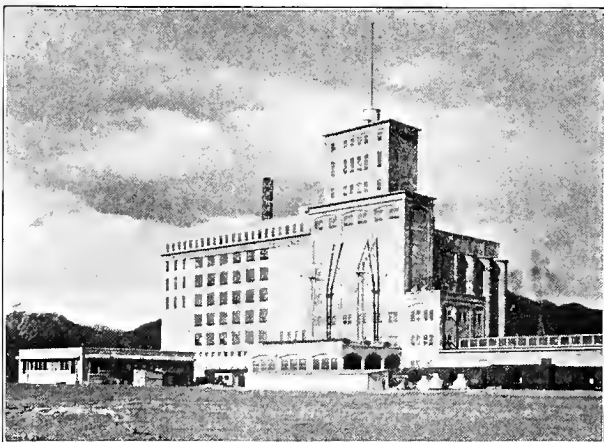
The Holley Milling Company's mill at Ogden, Utah, which has benefited by economy and efficiency resulting from the installation of electric power. Practically all of the larger mills and many of the smaller ones in the Intermountain section are electrically equipped throughout.



The four mills of Ogden show annual products valued at \$30,000,000. This industry has had a remarkable development in the past few years due to strategic location with regard to transportation facilities and proximity to the great wheat growing areas in the Pacific Northwest.



Switchrack on the roof of Globe Grain and Milling Company's transformer house. The immense elevators in the background are operated by electricity. The electrical installation represents the latest engineering advance in the application of electricity to the manifold requirements of the industry.



The Globe mill, pictured above, is not yet ready for operation, but the machinery is being installed and it is expected that it will be completed and in operation by January 1, 1922, with a capacity of 3,200 barrels of flour per day.



The Sperry mill is a splendid example of the adaptation of electricity to flour milling. To eliminate as much as possible the danger of dust explosion, the latest dust collecting equipment is used, the dust being collected by blowers from the different departments and later disposed of.

Study Course

A University Accounting Course for the Contractor-Dealer and the Business Men in the Small Industrial Plant

HOW TO INCREASE THE RATE OF TURNOVER IN MERCHANDISE

A low turnover rate usually means that the stock of merchandise carried is unnecessarily large. At the start it is well to point out the most frequent causes of overstocking, and hence, of low turnover rates in merchandise.

Most contractor-dealers overstock because they over-estimate the quantities that will be required to avoid shortages, or because they are too strongly tempted by the desire to secure the reductions in price that may be obtained by buying in large quantities.

Turnover rates are often considerably lowered because of the existence of an accumulation of obsolete and slow-moving stock which has resulted from the exercise of poor buying judgment in the past.

The problem of securing a high turnover rate in merchandise is not a difficult one for the contractor-dealer located in one of the larger cities where frequent deliveries from the jobbing houses can be obtained. Such a dealer can increase his turnover rate by buying prudently of any item of stock which is not a standard or staple item. He may also promote his turnover rate by taking every possible step to use up and get rid of his obsolete and slow moving stock.

But for the contractor-dealer located in one of the smaller towns who must count on a considerable lapse of time between the date when an order is placed and the date when the goods will be received, the problem is not so simple. Such a dealer can, of course, keep down his investment in stock by not buying in large quantities merely in order to secure good prices, and by taking every practical measure to move his "dead" stock. However, the contractor-dealer located far from a jobbing house is confronted with a situation which the dealer in the large city does not face. He constantly runs the risk of exhausting his stock before new supplies are received. The expense and annoyance caused by such shortages are a strong incentive to order in large quantities. In doing so, however, he makes a mistake. He should order no more than a three or four months' supply of any item at one time. He should regularly go over his stock each month, and with a definite knowledge of the amount of each item he has used per month in the past, he should make up a complete list of his requirements. By ordering once a month so as to completely cover his requirements, the dealer will be able not only to keep his stock of merchandise at a minimum without danger of shortage, but he will also be able to effect econ-

omies for himself in the way of office work, freight and unpacking.

The reasons why this apparently simple and common-sense plan is not followed, are that most contractor-dealers have no system which enables them to make up each month a complete list of their requirements and that they do not know the past consumption of each item of stock. In the ensuing paragraphs a simple system by which this information may be gathered is described. This system is used in every storehouse throughout the Southern Pacific railroad system. It is extremely simple and inexpensive to operate. It will well pay the contractor-dealer who is located at a distance from a jobbing house to carefully study it and to install it.

A Stock-Room System for the Contractor-Dealer

In the stock-room or warehouse, several stock racks should be built with bins sufficient in number to more than provide for every item of stock carried. A tag holder should be placed over every bin. Each item of stock should be definitely allotted a certain bin and a tag bearing a full description of the item should be placed in the tagholder above it. The items of stock should be arranged in some logical sequence in the stock racks, running in rows either from left to right or from top to bottom. The material in each bin should be neatly piled so that it may be counted, as nearly as can be, at a glance. When new stock which has been received is checked, it should promptly be placed in the proper bins. The key-note of this stockroom arrangement is that each item shall be assigned a definite location, that the entire stock of each item shall be kept together, and that this stock shall be neatly arranged so that the amount on hand may be ascertained at a glance.

What is known as a Stock Book must be maintained. The Stock Book is a loose-leaf book, the sheets of which are printed in pairs. The Stock Book pages are about 16 in. x 16 in. in size and are columnar in form. A wide space on the left side of the left hand page is provided in which a complete catalog description of each item is written. The items of stock are arranged in the Stock Book in exactly the same order in which they are arranged in the stock racks. The remainder of the left hand page and all of the right hand page are divided into twelve large columns—one for each month in the year. Each of these twelve columns is, in turn, divided into three sub-columns. The first of these three sub-columns bears the heading "On Hand"; the second bears the heading "Ordered"; and the third "Date Received."

Stock Book Aids in Taking Inventory

A complete inventory of the stock on hand should be taken on a prescribed day of each month. This inventory may be taken by the stockroom boy or any other person during spare hours. The person taking the inventory takes the Stock Book in hand and starts with the first item listed therein. He counts the stock in the first bin and enters the amount on hand in the Stock Book in the "On Hand" column opposite the descriptions of the first item.

DESCRIPTION	STOCK BOOK															
	January				February				March				April			
	Unit	On Hand	Ordered	Date Recd	On Hand	Ordered	Date Recd	On Hand	Ordered	Date Recd	On Hand	Ordered	Date Recd			
FUSES, G-E Enclosed Schedule #, Class 1 G.E. Co. Cata. No. 942, p. 187 Cata. No. Amp. Cap. volts																
50950	1	250			24	100 R-1	2/4	94					51	100 R-4	4/26	
50951	2	*	238	200 R-1	91	100 R-1 2/4 100 R-2 2/27	345						216	100 R-4	4/26	
54949	3	*	84		60	100 R-2 2/27	158						97			
50379	4	*	246	400 R-1	110	100 R-1 2/4	378						243	100 R-4	4/26	
54950	5	*	508	1000 R-1	1/21	1165		760	1000 R-3				464	1000 R-3	4/18	
50380	6	*	501	1000 R-1	1/21	1002		609	1000 R-3	3/28			158			
50381	7	*	198		84	100 R-2 2/27	225	100 R-2 4/18 100 R-3					51	100 R-2 4/18 100 R-3 4/18		
54951	8	*	52		31	100 R-2 1/27	43						10	50 R-4		
50382	9	*	113		71	100 R-2	38	100 R-2 3/11					102			

*Figures marked thus to show in red ink in the Stock Book

FAC-SIMILE OF STOCK BOOK PAGE

The stock book is a loose leaf book, the sheets of which are printed in pairs. The pages are about 16 in. x 16 in. in size and are columnar in form. A complete catalog description of each item is written in the wide space on the left side of the left hand page. The items of stock are arranged in the stock book in exactly the same order in which they are arranged in the stock racks.

He then steps to the next bin and after counting the amount on hand enters the amount in the "On Hand" column opposite the description of the second item. He proceeds from one bin to the next in this manner, entering the quantities on hand in the Stock Book. It takes an astonishingly short time to take a complete and accurate inventory in this way as the basis for ordering because:

1. The description of each item is already in the stock book and so eliminates all writing except the mere notation of the amount on hand.
2. The fact that the items are arranged in the Stock Book in the same order in which they are arranged in the racks eliminates all unnecessary movement from one part of the stockroom to another.
3. The material in each bin is piled so that the quantity on hand may be counted at a glance.

After the stock has been counted, the contractor-dealer or some person familiar with the business should then take the stock book to decide upon the quantities to be ordered. The person doing the ordering thumbs over the pages looking at the amounts on hand. He enters in the stock book the amount of each item he wishes to order opposite the description in the second sub-column which is headed "Ordered." It is possible to run through the stock book in this way in a remarkably short time, ordering everything needed and overlooking nothing. If a clerk or stenographer is available, the stock book may then be given to that person in order to have the list of goods needed written. The stenographer can write up the complete list in the shortest possible time, because the complete catalog description of each item is in the Stock Book.

Each list of goods ordered by the contractor-dealer from each concern should be given in a serial number. This serial number should be entered by the stenographer, as she writes the list, in the Stock Book in the second sub-column, together with the amount shown ordered. A copy of each list of goods ordered should be kept.

When the goods arrive, they should be "checked off" on this copy of the list of goods ordered. This copy should later be used in checking the invoice for the goods sent by the jobber. This copy should also be used for the purpose of showing in the Stock Book the receipt of the items there shown ordered. The fact that an item ordered has been received may most easily be shown by drawing a circle around the amount ordered and by noting the date of receipt in the third sub-column headed "Date Received." See the illustration. If only part of the amount ordered is received, the amount received should be written near the amount ordered and circled instead.

Items ordered one month that are not received during that month should be shown in the next month in the "Ordered" column, carried forward in red ink. If received then, the red figure shown in the "Ordered" column for the current month is the only one that should be circled. If the item is not received during the second month, it should be again carried forward in red ink. If only a part of the amount ordered is received and the remainder is "back ordered," the part not yet received should be carried forward in red ink.

Presents Accurate Turnover Record

As a result of this system, the Stock Book presents to the person doing the ordering all the information required for intelligent decision. It shows in the "On Hand" column the present stock. In the "Ordered" column it shows the amounts ordered which have not yet been received. By looking along the same line in the columns of previous months, the average monthly consumption may be seen at a glance. The amount of the item usually ordered may also be seen. With a little practice, all these facts may be seen almost simultaneously and form a basis for quick, intelligent work.

The stock room system is as adaptable to the small stock room in which the contractor-dealer does all the work himself as it is to the large one. It makes it necessary to keep the stock room neat and orderly and to have the material properly put away instead of scattered about where it may be overlooked or be broken. This system acts as a periodical reminder of the obsolete items of stock and provides an incentive to "move" such stock when possible. It saves time in filling requisitions. Useless searching for misplaced material is eliminated. However, these benefits and numerous others are merely incidental. The most important result of this system is that it makes it easy for the contractor-dealer located at a distance from a jobbing house to keep his stock of merchandise down to a minimum and so to increase his merchandise turnover rate.

Increasing Production in Industry

Shortcuts in Management and New Power Applications That Have Reduced the Cost of Manufacturing Processes or Increased the Rate of Production.

Ideas and Suggestions by Practical Men.

Power Driven Earth-boring Machine Is Mounted on Truck

A very successful power driven earth-boring machine has been recently invented by J. B. Spowart, engineer for the Pacific Telephone and Telegraph Company. This company now has three of these machines mounted on trucks similar to the one pictured below, which are in use in Washington, Oregon and California.

Under ideal conditions the machine with derrick attachment has bored 120 holes and set the poles, in eight hours, with three men to operate it. The machine is mounted on the front end of the chassis of a motor truck. Because of the fact that the pole line invariably extends "cross-country" a truck having four wheel drive was adopted to facilitate the negotiation of the surface encountered in plowed fields, irrigation ditches and the like. The mounting of the boring-machine is such that it is possible to bore a vertical hole with the truck on any negotiable grade; it is also possible to bore a hole at any angle up to 45 degrees from the vertical, with the truck of the level.

The earth-boring machine is driven through a universal shaft from the power take-off of the truck transmission. Since there are four speeds and a reverse in the truck transmission, the earth-boring machine may be driven at a wide range of speeds, thus adapting it for soils of different na-

THIS DEPARTMENT

will be devoted to a discussion of practical problems of industrial operation and management. Readers' requests for information, will be published in each issue, together with the answers to previous questions. It is hoped that readers will take full advantage of this opportunity to profit by the practical experience of others and to give others the benefit of their own discoveries. Space rates will be paid for answers which are published.

tures such as adobe, clay, sand, hardpan, etc.

In keeping with the idea for which the machine was primarily designed, to eliminate manual labor as much as possible, a derrick with a movable boom is mounted on the truck bed about "midships" to facilitate the setting of pole in the hole. It may be mentioned here that the pole is set with cross-arms bolted in place, thus effecting a saving of time as it is much more convenient to bolt the cross-arm in place while the pole is on the ground. The same advantage is to be gained in the case of guy wires.

The controls of the earth-boring machine and derrick are situated within easy reach of the truck driver which obviates the necessity of changing his position to operate either the earth-boring machine and derrick, or of the necessity of having a separate operator for the operation of the earth-boring machine and derrick.

Since the left hand drive is almost universal in the United States, it is for this reason that the auger of the boring machine is placed on the left hand side of the truck where it is in plain view of the driver. The driver spots the point of auger on the surveyor's stake and sets the brakes on the truck, shifts the compound gear of the truck to neutral, and pulls in the clutch on the earth-boring machine. The auger is fed mechanically or by gravity. As soon as the auger buries itself, it is lifted by a second clutch until the lower side of the auger is clear of the ground. The auger is now turned in a clock-wise direction at a high rate of speed, thus throwing the soil by centrifugal force from the auger and clear of the hole. A hole 6 ft. deep, 22 in. in diameter, can be bored on an average of seven minutes, considering all classes of soil.

An improvement on the augers hitherto used is an earth retaining gate developed by Mr. Spowart. The difficulty experienced with the standard type of auger was that a considerable

amount of earth would fall from it, when being raised from the hole. This gate feature alone aids considerably in reducing the time consumed in boring a hole, inasmuch as the amount of earth lost is less.

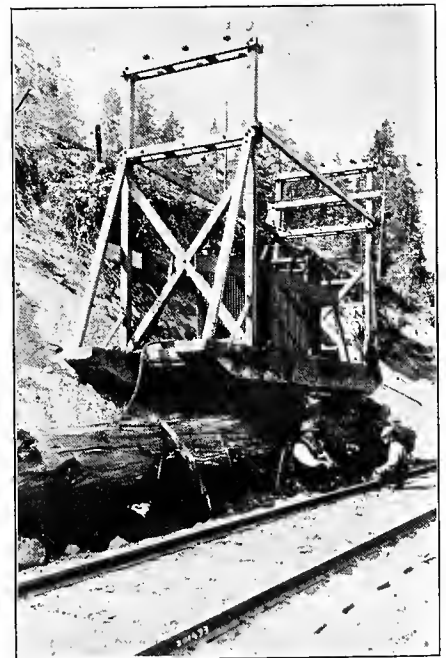
The speed at which the auger is fed is dependent upon the nature of the soil. For hard-pan, the auger must be turned slowly to prevent the cutting edges of the auger from being burned. It may be said here that the cutting edges are replaceable, which fact lengthens the life of the auger. These cutting edges, two in number, are placed at an angle such as is found in a standard twist drill.

Another important feature which is incorporated in the auger gearing is that in case a hidden obstruction under the soil is struck, the auger feed is automatically and instantaneously reversed, thus raising the auger and precluding the possibility of any injury to the driving mechanism.

The truck being unaltered in any way by the application of the earth-boring machine to the chassis, it follows that in case the truck must be used for the purpose for which it was originally intended, it is possible to remove the boring machine within a few hours' time. One of the objections to certain other earth-boring machines was the cost, but this attached earth-boring machine may be built for a small fraction of the cost of other machines. The interest on the investment



Huge earth-boring auger on the end of a twelve-foot shaft mounted on front of auto truck facilitates installation of telephone poles.



Transformer mounted on a sled transmits energy to a portable electric yarder and loader through flexible cable laid on the ground.

is also a factor to be considered, since the capital invested is small.

Upon first thought, one might believe that the weight of the earth-boring machine attachment is considerable, but such is not the case, as the total weight comes to about 1800 lb.

Mobile Transformer Supplies Power for Logging Operations

The application of electric apparatus to the various processes in sawmills is widespread, but it remained for the Snoqualmie Falls Lumber Company of Snoqualmie Falls, Washington, to use it on actual logging apparatus in the forest.

They have at present for this work in the woods a yarder and loader both mounted on the same sled. The former is a Willamette Iron Works Humboldt three drum yarder, having for motive power a General Electric 200-hp. phase wound induction motor used on a three-phase, 60-cycle, 550-volt power circuit. The loader, also built by the Willamette Iron Works, is equipped with two G. E. 75-hp. phase wound induction motors. The two machines each occupy half of a 60-ft. sled, which renders them portable.

The power supply for the two machines is stepped up to 13,200 volts at the mill power plant, by three 250-kva. transformers transmitted through the woods, and stepped down to operating voltage by two 250-kva. single-phase, 600/13,200-volt transformers, on the scene of operations. The transformers are rendered mobile by being mounted on a small sled which is equipped with a disconnecting switch. This sled is set about 500 ft. distant from the one carrying the yarder and loader, energy being transmitted between them by a flexible armored cable laid on the ground.

Some difficulty was experienced at first in obtaining desired slow speeds on the yarder, but when this was overcome by the insertion of resistance in the phases of the rotor, the operation was highly satisfactory. In 1918 the machine yarded 3,144,898 ft. of timber in 44 days, or an average of 71,470 ft. per day. In 1919, due to increase in the transformer capacity, the average per day was raised to 77,000 ft.

The same efficiency which characterizes the operation of the electric yarder is demonstrated by the loader. In fact, the application of solenoid load brakes to the motor make it possible with a steam driven outfit. It is also possible by means of this braking system to do one thing which a steam outfit cannot do, namely, to hold a log suspended in mid-air, or in any position desired. This is made possible by the fact that when power is shut off from the motor the solenoid brake sets automatically, so as to prevent any motion.

The good results obtained by the electrification of logging operations are the most convincing argument possible in favor of electrification of the logging industry generally. Methods that increase production and cut costs are as valuable in lumbering as in any other industry, and deserve thorough consideration by those interested in the progress of the industry.

Engineer Overcomes Difficulty in Filing Magazine Clippings

For many years I collected clippings from technical and other magazines and papers but had difficulty in arranging them in a manner to permit instant reference to any clipping covering a subject to which a clipping might apply.

Like many others, I first tried pasting the clippings in a scrap book which

method proved unsatisfactory and inadequate due to the time required for filing and the necessity of a separate index, in addition to the fact that such a book is soon filled and becomes unwieldy.

I next tried filing in envelopes, and this was not satisfactory as too many envelopes are required if the clippings are to be thoroughly segregated for instant reference.

The method finally adopted requires the use of a standard filing cabinet, as illustrated, with drawers holding 6-in. by 9-in. index cards.

It will be noted that a page from a standard technical or similar magazine measures 9 in. by 12 in. and when trimmed and folded once will fit a 6-in. by 9-in. drawer.

A 6-in. by 9-in. index card is used for every subject and when a clipping covers more than one subject and does not permit of separation, in some cases the subject matter of each being on separate sides of the clipping, a properly titled separate card is filed to cover one of the articles on the clipping and on the card is marked the subject or index under which the clipping is filed.

For example, a clipping with reference to "Flow of steam through pipes" has on the reverse side an article relative to the "Melting point of fire brick." The clipping is filed under STEAM and a separate card is filed under BRICK and on the card is written "Fire Brick, Melting Point of"—filed under STEAM, see "Flow of steam through pipes."

In the case of small clippings they are pasted on 6-in. by 9-in. cards and are filed in the usual manner.

A cross index is used when necessary to list a single clipping requiring more than one key word.

In a six drawer file I now have approximately six hundred cards with subject matter. The last twenty odd cards in the file are indexed as follows:

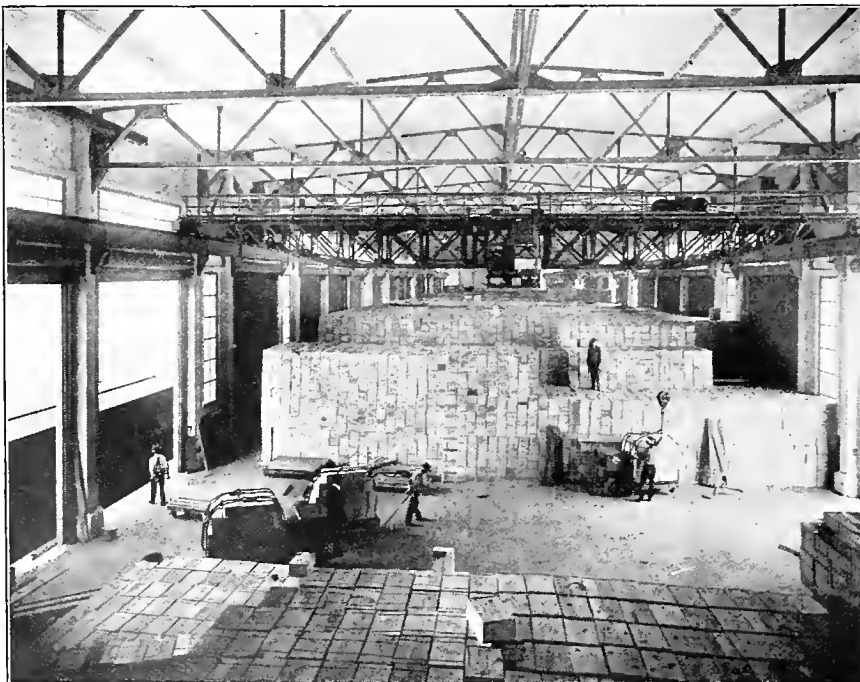
Water, water hammer, water motors, water measurement, water treatment, water power, water wheels, water proofing, weighing machinery, weights and measures, wells, welding, winches, wire, wire prices (this on a blue card), wiring tables, woodwork, vehicle equipment, zinc.

In magazines and papers there are innumerable articles that are read and forgotten which, if filed, in the above manner, are of great value for future reference. In such cases it is impossible to retain the entire magazine or paper on account of the large accumulation that would result and if retained in its entirety its usefulness is lost due to lack of an index, in most cases, which permits articles under any subject to be readily found.

To clip and file, in the above manner, articles of interest and value is not difficult and consumes comparatively little time providing it is done systematically and regularly. If a lot of clippings are allowed to accumulate without filing it then becomes burdensome. But having a place for immediate filing is in itself an incentive to DO IT NOW.

STEPHEN L. SINCLAIR.

Rupert, Idaho.



MUNICIPAL TERMINAL HAS LATEST ELECTRICAL LOADING EQUIPMENT

The city of Richmond, California, has recently constructed a \$200,000 municipal wharf and warehouse. This terminal contains one of the most modern installations of electric loading machinery on the Pacific Coast. The equipment includes small electric trucks together with hoists, conveyors and other devices which materially decrease the cost of loading and unloading the large ocean-going vessels.

Western Dealer, Jobber and Agent

Business building suggestions for the store—Distribution and warehousing methods—Advertising and sales promotion ideas

Horse and Wagon Take Store to Salt Lake Consumer's Home

Realizing that the public is not responding to newspaper advertising or window displays the way it used to, the Edison Electric Appliance Company of Salt Lake City have conceived the idea of taking the store right out to the consumer's home, and are using it to good advantage.

They have secured a fair sized dray drawn by one horse. On either side of the dray canvas signs have been posted which read: "The Hotpoint Store Brought to Your Door." The wagon is in charge of two solicitors, one for each side of the street, and is driven by a boy. It carries samples of each of the lamp socket appliances, such as grills, irons, vacuum cleaners and other popular appliances.

The solicitors go from house to house. When one makes his call and finds that the prospect already has an electric iron, he immediately returns to the wagon and secures some other appliance in which he believes she might be interested. In this way he has an opportunity to demonstrate right in a consumer's home the advantages of the grill or other appliance. In many cases he prepares lunch on a grill and the firm sold many of these appliances the first week the campaign was under way.

The firm has also found that the wagon with its large signs is a good advertising feature. Drawn by a horse, it moves slowly up the block within plain sight of every one. Many housewives have come from their homes to the street to question the solicitors even before they have called on them.

Electric Signs Prove Effective in Increasing Sales

The effectiveness of the electric sign as a means of drawing trade to a store has been outlined by T. W. Simpson, advertising expert, in a paper, "The Reason Why of Electrical Advertising," given before a recent convention of the Associated Advertising Clubs of the Pacific Coast. The data, which was compiled from extensive research can either be taken as an indication of how a dealer may increase his sales, or used by him as an argument in selling electric signs. The average business done by a retail merchant after installing an electric sign in front of his store follows:

Normal business before sign purchase	100%
1st month after sign purchase	162%
2nd month after sign purchase	174%
3rd month after sign purchase	180%
4th month after sign purchase	178%

These figures were found to be applicable also to upstairs or second-floor stores.

Electrical Window Displays as They Should Not Be

A List of Admonitions for the Jobber, Dealer and Factory Representative Regarding Correct Window Arrangement

By S. W. BISHOP

Executive Manager, Denver Electrical Cooperative Campaign

Just as fresh cherries and milk do not make a good diet, so are there improper combinations in window displays. Negative suggestions as to methods which should not be practised are as important to jobbers, dealers and factory representatives who have elaborate window displays, as is the code of "don'ts" laid down by a physician to his patient. The following list of admonitions, while primarily addressed to the electrical industry, is applicable to any merchant who has a variety of articles to display.

Don't scheme around in the effort to see how much material can be placed in a show window. Such a place was intended for display and not for storage. The basement or back room is more convenient and certainly less expensive. Besides, the passerby has not time to notice a multiplicity of articles.

Don't put a "cherry and milk" diet on display. By this is meant not to display electric radiators and fans at the same time with such recommendations on signs as "Keep Cool" and "Keep Warm" within three feet of each other. During the autumn there may be some people who would like to experience both conditions, but it doesn't pay to gamble on the weather. Direct the display along specialized channels. The window cannot argue

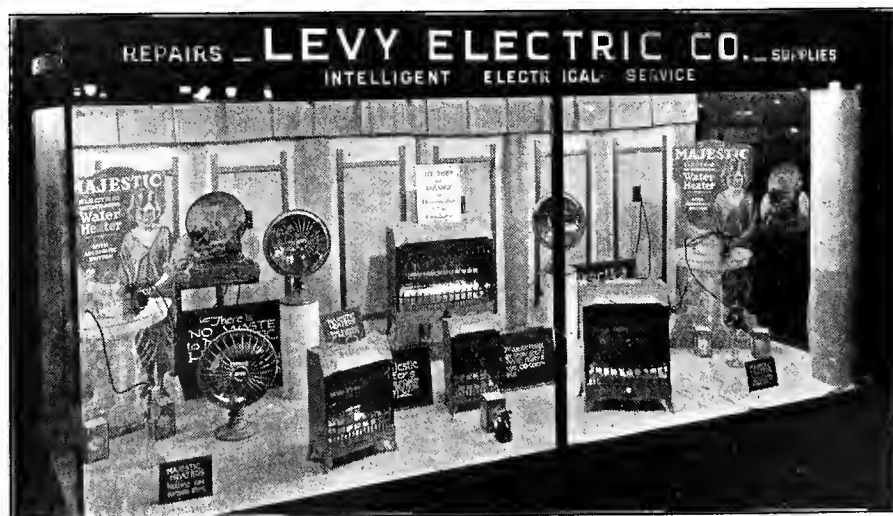
but it can be made to suggest, if not convince.

Don't arrange a display or place large appliances in a window where the top of the display will be above the vision of the average passerby. Such a case is that of the artistic table with waffles and other edibles spread out over the top with a background of appliances but which on account of the height of the floor in the window elevates the display from five to six feet above the sidewalk. A similar situation is found in the display of many washing machines and heavy laundry equipment. Place the lay-out so spectators and possible purchasers can see without unusual effort.

Don't run a sign across the glass of a display window which will in any way serve as an obstruction to the vision of those people who might look into the window while passing. Place it high enough or arrange space on the lower corners of the glass for the name, business, or store number. Appealing displays oftentimes get business where names do not.

Don't display the store through the display window. Windows are silent salesmen and not guides to the interior arrangement. Box the windows off. Make them artistic. Use judgment in the display and it will bring trade.

WINTER AND THE ELECTRIC HEATER TRADE



With the advent of fall and winter, dealers everywhere prepare for a vigorous campaign for electric heating appliances. The above window of the store of the Levy Electric Co. in San Francisco, shows what can be done in the way of attractive window decoration. Particular emphasis has been placed upon the instantaneous faucet heater by the displays at either corner of the window.



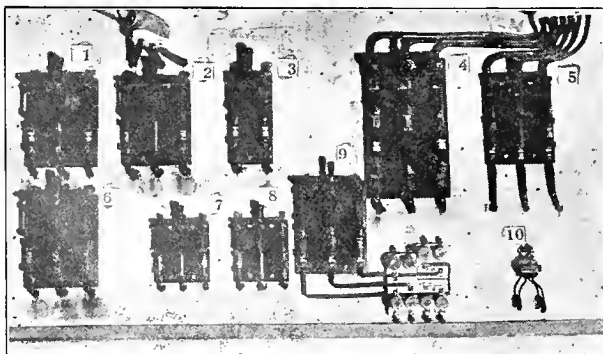
Refrigerator, range, iron and dishwasher, all are operated by electricity, making the kitchen an ideal room for the housewife.



In the breakfast room, a meal can be prepared without leaving the table owing to the arrangements made for convenience outlets.



The living room with its electric fireplace and unique lighting scheme is one of the most comfortable rooms in the entire house.



The mechanical details in connection with the wiring are interesting as the above reproduction of the main switchboard shows.



The home of H. J. Gute in the hills above Berkeley, California, which is said to be the most completely electrified home in the West.

Berkeley, California, Has Most Complete Electrical Home in the West

Private Residence Constructed by H. J. Gute Shows Spread of Electrical Home Idea Fostered by Cooperative Campaigns

IT has been but little more than a year since the now widely known electrical home campaigns have been launched in the West, but already the adaptability of the public to the convenience idea has been demonstrated with the completion of the home of H. J. Gute in the hills above Berkeley, California. With its 175 outlets, its two and a quarter miles of wire and the application of electricity in every nook and corner, the home is a modern example of the electrical ideal. Electricity performs every task that will lessen the work of the housewife besides completely heating the entire house and furnishing the hot water.

A distinct advance has been made in electric heating as applied to the Gute home. In each room there is a 20-ampere convenience outlet on a 220-volt circuit, fed by 10-gage wire. On these outlets are attached 2 and 5-kw. heaters. The heater in the living room has been constructed into the fire place. It has a capacity of 6000 watts and consists of six hollow clay cores. The installation of this fireplace, which does away with chimney and flues, cost but \$160 against the estimated cost of \$1200 for a complete wood or coal burning fireplace. Temperature control is made possible by a three-heat switch which operates two, four or all six of the coils. The absolute cleanliness of this home throughout is attributed to the electric heat.

Electric water heaters furnish the home with hot water. An elaborate furnace system was first planned both to perform this function and heat the house, but investigation of the possibilities of electric heat, caused this plan to be abandoned. A thermostat controls the temperature of the water.

The economic operation of the heating system is accomplished by the installation of both a power and lighting meter. All power other than that used in lighting is measured on the power meter and paid for at a 3½ and 2-cent rate. According to Mr. Gute, the entire electric bill for the house is but \$20 per month.

The wiring system includes three circuits, one 220-volt circuit for heating on a separate meter, one 110-volt circuit for operating all small conveniences, and one 110-volt circuit for lighting.

Convenience outlets have not been overlooked and there are from two to six in each room. Dishwashing, cooking, refrigeration, heating and polishing are done by electricity in the kitchen, which is the most completely electrical spot in the home. The fixtures throughout the house have been specially designed, many in gold and silver plate, while those in the billiard room are hammered bronze. In all of the large rooms except the dining room, four side brackets furnish the light, supplemented by various stand and table lamps. The lines of the panelled ceilings are retained by placing the fixtures on the sides of the rooms.

A three hundred watt lamp on each of the four exterior corners of the house provide a unique burglar alarm system as well as affording an opportunity for giving moonlight effect to the garden at a social function.

The home is a demonstration of the value of the electrical home publicity. The public is continually searching for ways to make the home more beautiful and more comfortable and every suggestion from the electrical contractor, architect, power company or casual friend is being investigated and many are being used. With the start made by the California Electrical Cooperative Campaign, a number of home builders have become enthused with the idea of the home electrical and the Gute residence is but one of a score or more which will be forthcoming in the future. It is now for every member of the industry in the West to continue advertising the benefits and conveniences, so that ten years from now, the western home will be an electrical home.

Merchandising a \$20,000,000 Factory Output of Fixtures in 1922

Merchandising the products of five factories which will amount to \$20,000,000 during 1922, is the problem which has been solved by the organization of R. Williamson and Company of Chicago, manufacturers of fixtures. The plan calls for the placing of complete fixture lines in the hands of jobbers through the agency of the central company while at the same time individual factories themselves may market a portion of their products independently.

In addition to the Williamson lines, the products of the St. Charles Fixture Manufacturing Company, Bayley and Sons, Inc., Robert Phillips Company, Inc., and Robert Findlay Fixture Manufacturing Company will be handled through the central agency of the Williamson merchandising department.

Sidney T. Beatie, manager, in a discussion of the correct merchandising of a product has said:

"A merchandising plan should not be based on the effect that it will have on the trade but on the effect it will have on the general public. Of course a program should help retailers, jobbers, contractors and power companies, but primarily the merchandising department should act as a go-between between manufacturer and the public. The best product from the factory at the best price to the public should be the motto followed.

"Merchandising and selling should not be confused. A salesman has one duty while a merchandiser has another. The latter is the representative of two publics, one large and one small, namely the general public and the manufacturer. Functioning as the agents of both, he finds himself in the position of a public buyer. Rather than attempt to sell his line, either through personal contact or advertising, he should offer service. The service centers around bettering the business of the dealer or the jobber.

"More sales,—that is the cry of manufacturers today. Sales must increase to compete with the price reductions. It is just as good practice to do a large quantity of business at a low margin of profit, as it is to do a smaller quantity at a higher profit. That is the basis of the merchandising plan which will market a twenty million dollar line of fixtures during the coming year."

Motion and effective lighting have been used in a new combination by a Los Angeles dealer for attracting the attention of people passing his store at night. Inserted in the cement sidewalk in letters two feet high is the word, "Stop." Glass similar to that used in sidewalk lights is used for the letters. Underneath are a battery of strong lights which are intermittently turned off and on throughout the evening.

The Denver Contractor-Dealers' Association and the Electrical Cooperative League of that city are assisting the small electragist whose business does not warrant a bookkeeper, in installing the "Simple Business Record" which has been evolved by the N. E. L. A.

Correct Service for Electric Heating Appliances

How a Western Manufacturer Solved a Difficult Problem by the Establishment of Service Stations in Large Cities

By E. F. STROH

Assistant District Sales Manager, Edison Electric Appliance Co., Ontario

Service is the seal of commercial good will. It transmutes passing contract into established relationship.

It crystallizes the moment's friendly understanding, giving it permanent form.

Service recreates daily the impulse which first opened a thousand doors at the summons of Electricity.

It gives your work and your influence a place in the family council and in the business conference.

It associates in men's minds the suggestion of permanence with that of the moment's electrical convenience.

It is the unfailing source of supply to which the user of electricity turns as he goes to his own home.

This is the measure of the importance of service to your vocation.

This is its function as the seal of commercial good will.

No matter how well any manufactured apparatus is made—no matter how splendidly it performs under laboratory test, and meets every theoretical expectation—there will always be a certain percentage of failures; performance not up to what was hoped; a certain percentage of neglect and abuse on the part of the purchaser.

Naturally in the first days of the industry, people looked with prejudiced eyes upon electric appliances. They were something new and untried. The appliances made great claims for themselves, but the price was high compared with other devices doing the same work in another way. The purchaser hesitated. She was willing to pay the price if she felt assured the device would do the work promised—the labor saver was worth the difference, but confidence in its efficiency was lacking. We had the confidence, and so we said to the prospective purchaser: "Buy, and we will protect you. If anything goes wrong we will make it good."

As time went on the new appliances were becoming more and more a household necessity. Mrs. Housekeeper was dependent upon them, and if anything went wrong often much inconvenience and annoyance was caused until it went the rounds from the dealer and factory for repair and back again into service.

It was to reduce this delay to a minimum and as a splendid stroke of sales policy that the service station idea was conceived. The original service station scheme was essentially a one-man job, but as time went on the idea was extended; ground floor locations in the central retail district were secured and attractive displays installed, and the service station made the headquarters for the local sales force.

It is a settled policy, however, that no retail sales of complete appliances are made at the service station. There is a well defined policy that all sales are made through the regular distributing channels, and where interest is aroused the prospect is referred to a local dealer, and he completes the sale.

We could now say to the dealer, and the dealer in turn to the user, "See here, we will not only guarantee to you everything we make, but we stand ready to make immediate repair or replacement on the spot should anything go wrong."

Our distributors were quick to real-

ize the tremendous sales leverage these service stations gave to them. It was a splendid "talking point" but unlike most sales "talking points" one of real value and pressure. Our whole thought is that our responsibility to the ultimate purchaser and to the dealer does not end with the finished sale of an appliance.

There are now fourteen service stations scattered throughout the United States, in Atlanta, Boston, Chicago, Los Angeles, New York, Ontario, Cal., Portland, Salt Lake City, San Francisco, Seattle, St. Louis, Dallas, New Orleans, Washington, D. C. Each service station is in charge of a factory-trained, expert repair man with necessary assistants and clerical help. Equipment, tools, and supplies are rapidly being standardized. Special jigs and fixtures have been designed to efficiently and quickly make repairs. Service station men are required to make careful report on any defects that come to their attention. These reports are very carefully studied and analyzed by the engineering department. A stock of the most called for supply parts is available at all stations, maximum and minimum limits being established by the general office in the light of local conditions. Careful track of these parts is kept through a perpetual card inventory and a complete report of stock conditions is reported to the general auditor twice a year.

Each service station is provided with a small working capital to meet current expenses including salaries, rent, light, heat, telephone and telegraph service, etc. Expenses are reported to the general office every Friday and a reimbursing check is then sent the service station.

Cash sales are reported on special forms, and charge sales are billed, reported to the general office and collections made from there.

Where a repair is not very complicated it is made while the customer is waiting. In most cases the slogan is "24-hour service."

A special service manual outlining general policies as to the guarantee, instructions for ordering parts and answering many questions that come up every day has just recently been distributed to the trade. Very complete supply parts lists are being prepared for all classes of appliances made by the company. These lists will be printed in sections, each section listing parts for a group of related appliances, as flatirons, grills, percolators, ranges, etc. These are all cut and punched to fit the standard catalogs.

The routine of handling a repair or replacement transaction is reduced to a minimum. In most cases a statement from a customer as to the length of service is taken as final, although there are checks as to when an appliance was manufactured.

The object is a satisfied customer, for a satisfied customer is a booster—a perpetual advertising medium.

Activities of the West

A Business Man's Department Devoted to Events and Developments in Western Industrial Centers—Including News of Interest to Readers in Public Utility, Industrial and Trade Fields

State Plans Building Program

Over \$7,000,000 to be Spent on Public Works in California Next Year

Six million dollars will be spent during the coming winter and spring for public works by the state of California, according to Edgerton Shore, a member of the State Board of Control. This extensive program has been planned to furnish employment for the 50,000 unemployed men in the state. Similarly the Board of Harbor Commissioners in San Francisco has announced that construction amounting to \$1,046,000 will be immediately undertaken by that body with a view of eliminating unemployment in the bay region.

Under the state construction program, the biggest undertaking will be the construction of the capitol annex which is to cost \$3,000,000. Work on this building will be commenced January 1. More than thirty other major buildings will be constructed under the program. Work on the majority will start December 1. The detailed program follows:

Agnews State Hospital, \$86,500.
Agricultural Park, Sacramento, \$20,000.
California Polytechnic School, \$44,000.
California Redwood Park, \$25,000.
California School for Girls, \$25,000.
California School for the Deaf and Blind, \$25,000.
Fish and Game Commission, San Pedro, \$1,500.
Humboldt State Teachers' College, \$25,000.
Industrial Farm for Women, \$55,000.
Industrial Home for Adult Blind, \$12,500.
Mendocino State Hospital, \$149,000.
Mission San Francisco de Solano, Sonoma, \$1,000.
Napa State Farm, \$25,000.
Napa State Hospital, \$124,000.
Norwalk State Hospital, \$318,000.
Pacific Colony, \$10,000.
Preston School of Industry, \$80,000.
Sacramento State Buildings, \$500,000.
San Diego State Teachers' College, \$35,000.
San Francisco State Building, \$400,000.
San Jose Teachers' College, \$25,000.
San Quentin State Prison, \$40,000.
Santa Barbara State Teachers' College, \$15,000.
Sonoma State Home, \$185,000.
Southern California State Hospital, \$100,000.
State Capitol, \$8500.
State Nursery, \$15,000.
State Printing Office, \$150,000.
Stockton State Hospital, \$100,000.
Veterans' Home, \$75,000.
Whittier State School, \$120,000.

The improvement of China Basin on San Francisco Bay is the first job planned by the harbor commissioners. The work will include the pulling of the present piles, dredging and the construction of the superstructure. It will cost \$850,000 and will provide work for 300 men for one year. Repairs to the lines of the Belt Railroad along the water front will amount to \$90,000 while the construction of reinforced concrete bulkheads at piers 17 and 25 will necessitate the expenditure of an additional \$76,000. The final job will be the construction of a bulkhead shed in front of pier 5 at a cost of \$30,000.

Utah Coal Mines Show Record Output

Coal mines in Utah during the nine months ended September 30, aggregated 2,988,095 tons, as compiled by C. A. Allen, state mine inspector for the state industrial commission. Comparative figures for the first six months and first nine months of the years 1919, 1920 and 1921 are as follows:

First six months—1919, 1,922,381 tons; 1920, 2,863,450 tons; 1921, 1,729,456 tons.

First nine months—1919, 3,142,006 tons; 1920, 2,291,450 tons; 1921, 2,988,095 tons.

Power Commission Gives Permits For California Projects

The Federal Power Commission in Washington has issued a license to the Western States Gas and Electric Company of Stockton, California, covering the hydroelectric developments on the South Fork of the American River planned by that company. The project consists of the erection of a power plant near Placerville with a capacity of 6500 hp. Three storage reservoirs will be constructed on the river in the El Dorado National Forest while the water will be brought to the power house by means of a diversion canal 20 miles long and a second canal from Finnon Reservoir to the penstock head.

The project will benefit from the proposed development on Silver Creek, a tributary of the American River, by R. W. Hawley of San Francisco, who has received a preliminary permit covering the use of 200 sec.-ft. for the generation of power. The El Dorado Power Company, a subsidiary of the Western States Company, has also applied for a permit for a similar amount of water from another of the tributaries of the river. Should all of these plants be completed, it is estimated that approximately 22,000 hp. will be developed.

That the naval radio stations be kept in use for handling press dispatches at a low rate was urged by V. S. McClatchy, publisher of the Sacramento Bee, at the recent press congress in Honolulu. McClatchy pointed out that the present Congressional resolution under which the newspapers send messages via the naval radio stations runs out next year and advised that new filings for this service be made with the government immediately.

The Oakland Chamber of Commerce is preparing a catalog of the 1400 or more factories located on the east side of San Francisco bay, which it expects to issue in booklet form within a short time.

Award Gorge Creek Contract

Seattle Awards Skagit River Unit to San Francisco Contractors

The Board of Public Works of Seattle has awarded the contract for the Gorge Creek tunnel, a part of the Skagit River power development project, to R. C. Storrie and Company, Crocker Building, San Francisco, on a bid of \$2,203,865. There were but two other bidders for the work, the Puget Sound Bridge and Dredging Company of Seattle, who offered to construct the tunnel for \$2,332,571, and Grant Smith and Company of Seattle, whose bid was \$2,476,840.

The contract calls for the construction of approximately 11,000 ft. of tunnel which will be concrete lined. In addition, two shorter tunnels will have to be built for temporarily carrying away the water. Seventy-five thousand feet of timber will be used for lining these temporary tunnels. The Storrie Company's bid follows:

Open cut excavations....	4,820 cu. yd.	\$ 24,100
Construction tunnels	282 lin. ft.	16,920
Temporary water tunnel	372 lin. ft.	22,320
Excavation of main tunnel	10,978 lin. ft.	1,306,382
Concrete lining, main tunnel	Same	614,768
Excav. surge tank and riser	10,830 cu. yd.	108,300
Concrete lining, surge tank	1,060 cu. yd.	31,800
Excav. penstock connection	2,260 cu. yd.	22,600
Concrete lining, penstock connection and bulkhead	930 cu. yd.	27,900
Excavation, intake.....	2,300 cu. yd.	16,100
Concrete lining, intake	235 cu. yd.	7,050
Timber lining, temporary and construction tunnels	75 M ft.	5,625

Plan Development of Iron Ore Deposits Near Portland

First-hand information on the possibilities for development of rich iron ore deposits in the vicinity of Scappoose, 20 miles from Portland, was gained recently by a party of Portland Ad Club members who made a trip of inspection to the deposits. The heavy veins of ore 6 to 10 ft. in depth which have been assayed and shown to contain as high as 55 per cent iron were shown to the visitors by A. W. Martin of the Oregon Charcoal Company who are interested in the project. Plans as explained by Mr. Martin for the development of the deposits, include the establishment of a furnace near Scappoose where 50 to 60 tons of pig iron will be turned out a day. Cheap charcoal produced by burning stumps and waste logs from cleared land would be used as fuel for reducing the ore to pig iron.

Because of the consequent industrial expansion in Portland much interest has been manifested of late in the development of the extensive deposits.

Utah Coal Mines to Undertake Extensive Developments

The Great Western Coal Mines Company has just been incorporated in Salt Lake City, and preparations are being made to begin work as soon as possible on the construction of railroad lines from the company's proposed new town-site to its coal veins. The property of the company is located at Gordon Creek, near Helper, and comprises about 4500 acres of ranch and coal lands. There are three large veins of coal in the mountain, eight, ten and fourteen feet thick.

The incorporators are George A. Storrs, president; Joseph S. Welch, vice-president; C. M. Croft, secretary; R. L. Bird, treasurer, and E. J. Welch, James Bailey and S. D. Hampton, directors. The company does not plan to sell any stock, but a bond issue of approximately \$600,000 is probable later.

The new town will bear the name of Great Western. The town is designed for the men to be employed by the company, and will not be a "company" town in any way.

The new company and the National and Gordon Creek Coal companies are jointly building about seven miles of railroad, to run from Utah Coal company's main line through the new town and to all of the coal properties of those three companies. Construction of the road is under the supervision of the National and Great Western coal companies. The town will be about six miles from the main line railroad, the coal mines a little more than one mile from the town proper.

California Cooperative Campaign Activities Outlined

Plans for the coming activities of the California Electrical Cooperative Campaign were considered at the meeting of the Advisory Committee held in San Francisco on October 20. A folder featuring the electrically wired home with special emphasis upon the convenience outlet was suggested for use of field men as well as for use of the contractor-dealers for mailing to those securing building permits throughout the state. The importance of securing accurate data on the cost of operation of electrical appliances was emphasized and a committee appointed to look into the matter. Attention was called to the revision of building codes and wiring regulations in various cities throughout the state and permission given to campaign field men to give advice on this subject when called upon. Special emphasis was laid upon the need for salesmanship instruction among those who sell direct to the public and a committee was appointed with a view to establishing such a salesmanship course at an early date.

American enterprise has added another unit to China's rapidly developing electrical system with the completion of a \$125,000 steam plant at Nanking to supply current to the river suburb of Hsiakwan. The plant contains a 2300-volt turbo-generator set. All of the machinery is of American make and the installation was done by an American engineering firm.

World Harbor Problems Discussed at Seattle Meet

Distinguished Men Gather at Convention of American Association of Port Authorities to Solve Trade Situation

With several hundred port experts from all parts of the world in attendance, the 10th annual and first international convention of the American Association of Port Authorities was held in Seattle from October 11 to October 14. This meeting succeeded the Northwest River and Harbor Congress held in Tacoma October 10, and preceded the convention of the Pacific Coast Port Association held in Vancouver, B. C., Oct. 17-18.

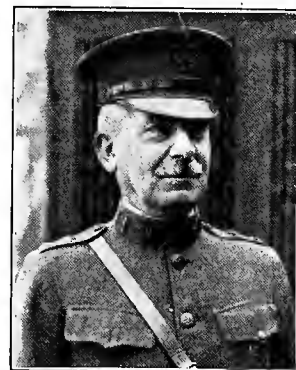
The convention represented the greatest gathering on port problems in the history of the world. The scope of the problems with which the convention dealt was world-wide, the great object being to bring about an economical and

in Seattle, and Capt. K. M. Moore. The Department of Commerce was represented by James E. Peebles. Rear-Admiral John A. Hoogewerff, commandant of the 13th Naval District, and the Naval Station, Puget Sound, was designated to represent the Navy Department.

The city of Toronto was selected as the meeting place for next year, and Benjamin Thompson of Tampa, Fla., was re-elected president, by unanimous vote. Other officers elected follow: first vice-president, J. Spencer Smith, vice-chairman of the Port of New York Authorities and president of the New Jersey Board of Commerce and Navigation; second vice-president, J. M. McCallum, president of the California State Harbor Commission at San Francisco; third vice-president, Col. G. H. Kirkpatrick, president of the Harbor Commission of Van-



Lieutenant Commander Guilherme Riegen, naval attaché at the Brazilian Embassy, Washington, who represented the South American republics at the convention.



Major-General Lansing H. Beach, chief of engineers of the U. S. Army, who officially represented the War Department at the harbor meetings.

efficient transfer of manufactured and raw materials between rail and water. The various papers and discussions read and held before the convention dealt with port construction, maintenance and operation, administration, management, encouragement of waterborne commerce, standardization of port facilities, and questions of like nature.

Both Canada and the United States were represented by a large number of men distinguished for their work in port development. As its representative, the Republic of Brazil sent Lieut. Commander Guilherme Riegen, assistant naval attaché to the Brazilian Embassy in Washington, D. C. Consul Bernard H. Pelly represented the British Government; Consul C. A. Guerard represented France; M. Watanabe of the Nippon Yusen Kaisha was the unofficial representative of Japan. The U. S. War Department was represented by Major-General Lansing H. Beach, chief of engineers of the U. S. Army, with Col. E. H. Shulz, district engineer

couver, B. C. The office of secretary held by M. P. Fennell, Jr., of Montreal, has a two-year term, and Mr. Fennell has another year to serve.

Directors chosen by the convention follow: Major-General Beach; T. S. McChesney, secretary of the Harbor Commission of New Orleans; Dr. W. T. Christensen, president of the Port of Seattle Commission; E. L. Cousins, chief engineer and manager of the Port of Toronto; G. L. King of Norfolk, Va.

The new executive committee consists of the following men: Brigadier General A. E. Labelle, of the Harbor Commission of Montreal; M. H. Bronsdon, city engineer and deputy harbor commissioner of Providence, R. I.; M. F. Steinberger, special engineer of the Baltimore and Ohio Railroad, Baltimore; with the following as ex-officio members of the committee: W. G. Ross of the Harbor Commission of Montreal, and John N. Cole, Commissioner of the Department of Public Works, Massachusetts.

Besides pledging support to the War Department's investigation of port terminal charges and practices in America, the convention voted to join in a movement to petition the governments at Washington, D. C., and Ottawa, to pass laws to overcome the floating oil menace in harbors. The petition will point out the fire danger to terminals and shipping presented by this menace.

Twenty injunction suits against power companies and irrigation districts in Northern California have been filed by the State Fish and Game Commission for the failure to construct suitable fish ladders over dams. It is claimed that less than one-half of one per cent of the salmon going up the Sacramento River and its tributaries are able to pass the dams.

Billings, Montana, is to be supplied with natural gas from the Elk Basin fields, according to plans announced by the Ohio Oil Company and the Illinois Pipe Line Company, subsidiaries of the Standard Oil Company. The 71-mile pipe line which will be constructed immediately will deliver more than 150,000,000 cubic feet of gas daily at the disposal of domestic consumers.

Salt Lake City Inaugurates Street Lighting System

Impressive Ceremonies Mark First Lighting of New \$150,000 Installation. Plan Further Improvements

Salt Lake's new whiteway lighting unit has been completed, and on the evening of October 5th, with 30,000 spectators in attendance, Mayor Neslen threw the lever which caused 336 luminous arc lamps to blaze into brilliancy.

The new district includes State street from South Temple to Fourth South street; three blocks on Broadway from West Temple to Second East streets, and one block on Fourth South from Main to State streets. The new instal-

lation consists of 336 6.6-ampere luminous arc lamps, of 1500 candle power each, on steel ornamental standards, three lamps to each pole, the top lamp being 25 ft. above the street, and the two lower lamps each 18 ft. above the street.



Looking north on Spring street in Salt Lake City showing the effectiveness of the new \$150,000 street lighting system which has been installed there and which comprises the first unit of an estimated half-million dollar installation.

The system was designed by W. D'Arcy Ryan, director of the illuminating engineering department of the General Electric Company. The decorative design of the standards is very attractive.

The cost of the installation is approximately \$150,000, of which the city will pay 10 per cent, the Utah Power and Light Company \$50,000, and the merchants the remainder, this arrangement being made under the provisions of a new state law which specifies that street lighting districts may be created and paid for by a special tax against abutting property. The maintenance cost will be shared by the merchants and the city, the city paying 10 per cent. The payment of the cost of installation will be distributed over a three-year period.

The three lamps on each standard are lighted until midnight. From midnight until dawn only one lamp, the topmost one, is lighted.

Plans are being formulated to light many more city blocks in a similar manner, and it is predicted that in another two years the intensely illuminated areas of Salt Lake City, which even now is recognized as one of the best lighted cities in the United States, will be double the present area.

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California County Engineer Act Unconstitutional

The Ream act, passed by the California Legislature in 1919 and creating the position of county engineer, was recently declared unconstitutional when the State Supreme Court reversed the decisions of the Sonoma County Superior Court and the District Court of Appeal in a case filed almost a year ago. The new decision holds that the act violates "the constitutional requirement that the system of county government shall be uniform throughout the state." Several counties with extensive engineering programs under way, handled by well organized engineering staffs, now face the situation of having no legal right to pay the official's salary. These salaries range between \$5000 and \$6000 per annum in counties where the salary of the county surveyor, who formerly did the work of the engineer, is paid but \$3200 per annum. Sonoma county has been advised by the district attorney to pass an emergency measure authorizing the reappointment of the county engineer.

City of Denver's Gas and Light Bills Cause Dispute

A unique situation has arisen in Denver, Colo., in which the city auditor has refused to pay the Denver Gas and Electric Light Company the sum of \$171,000, which the company claims is due for street lighting, on the grounds that the company owes the city \$600,000 for excess charges for gas used by the city. The gas rebates are under advisement at the present time and the case will not be definitely settled until later. Until such a time as the question of the gas rebates is settled, the auditor refuses to pay the light bills.

Engineers are at present surveying the territory south and east of Oroville preparatory to commencing the actual work of the Great Western Power Company in completing the system of canals which will utilize the water from its hydroelectric plants on the Feather River for irrigation purposes. It is estimated that approximately 61,000 acres will be irrigated by the intricate canal system.

Contract Awarded for Pasco-Kennewick Toll Bridge

The Union Bridge Company, Central Building, Seattle, on October 14 submitted the low bid of \$426,900 and was awarded the contract by the Board of Trustees of the Inter-County Bridge Company, Walla Walla, for the erection of a proposed toll bridge across the Columbia River between Pasco and Kennewick. There were but three other bidders, A. Guthrie & Co., Portland, \$430,000; J. D. Cameron, Seattle, \$437,000, and the Illinois Steel Bridge Co., Spokane, \$438,000.

The bridge will be a steel and frame structure, 3,266 ft. long. There will be two steel spans, each 252 ft. long. The cantilever span will consist of two anchor arms, each 232 ft. long, and two cantilever arms each 126 ft. long. There will also be a suspended span, 180 ft. long. The steel span will total a length of 1,410 ft. The bridge will have a 20-ft. roadway, designed to carry two 20-ton trucks or their equivalent. Work is expected to begin on the contract immediately and construction will consume from 14 to 18 months' time. Plans for the bridge were prepared by the Union Bridge Company, Chas. G. Huber, president, by chief engineer M. M. Caldwell.

Electrical Exhibitors Ready For S. F. Exposition

Plans for the Industrial Exposition to be held in San Francisco from November 19 to December 10 are rapidly rounding into shape, according to the committees in charge of the show. Nearly every manufacturing concern in the region adjacent to San Francisco will exhibit and the entire exposition will be one of the most elaborate of its kind ever undertaken.

Of the forty booths assigned to the electrical industry, practically all have been reserved, many companies taking from two to four of the allotted spaces. An unofficial list of the exhibitors in this section, which is the choicest in the entire municipal auditorium, follows:

- Safety Electric Switch Co.
- Federal Electric Co.
- Electrical Testing Laboratories.
- California Metal Manufacturing Co.
- Kercher Electric Cooker Co.
- General Electric Co.
- Great Western Power Co.
- Journal of Electricity and Western Industry.
- Pacific Gas and Electric Co.
- Pacific Fire Extinguisher Co.
- Pacific Coast Steel Co.
- Majestic Electric Development Co.
- Moorhead Laboratories.
- Magnavox Co.
- Federal Telegraph Co.
- Mazda Lamps.
- Everready Battery Co.
- Signal Corps, U. S. A.
- Western Union.

Surveys recently completed by John A. Lewis, former state engineer of Oregon, show that 270,000 acres in Oregon and Washington are available for irrigation through the development of the Umatilla Rapids power project. The report estimates that sufficient water could be impounded behind a dam 30 feet above the low water level to both irrigate the land and develop 125,000 horsepower in electric energy. It is estimated that \$31,900,000 would finance the development.

Spring Gap Plant Completed on Stanislaus River

Western ingenuity was again brought into play with the completion and placing in service of the Spring Gap plant of the Pacific Gas and Electric Company on the Stanislaus River. In the construction of the plant the company engineers utilized a portion of an old mine system, saving a considerable sum in the cost of the penstock and canal system.

The plant is located at Bakers Crossing three miles above Sand Bar Dam. It is supplied with water from the South Fork of the Stanislaus River by means of the old Philadelphia Ditch, a remnant of pioneer mining days. Work on the plant was commenced in the spring of 1920.

A combined header box and wastewater of reinforced concrete takes care of the water at the end of the ditch. The overflow weir spills the excess water into a collecting chute from which it is discharged into the river bed by the channel cut by the water before the plant was installed.

The slope length of the penstock is 7253 ft. A portion of 36-in. and 30-in. pipe which formerly comprised a pressure siphon known as the "Mine Line" was used in its construction. The head developed is 1865 ft.

The installation consists of a 9500-hp. Pelton single overhung impulse wheel direct connected to a 7500-kva. 6600-volt 60-cycle General Electric generator. The transformer bank consists of three 2500-kva., outdoor type water cooled transformers. The transmission line is approximately 15½ miles in length, connecting with the power lines of the Sierra and San Francisco Company at the Stanislaus plant. The towers, 205 in number, are "H" frames with 22-ft. crossarms. The spans vary from 200 to 1200 ft. with an average of 400 ft. A minimum ground clearance of 30 ft. is maintained. The power is transmitted at 104,000 volts.

Montana Visit of Railroad Heads May Mean Electrification

A recent visit of officials of the Delaware, Lackawanna and Western Railroad over the electrified lines of the Chicago, Milwaukee and St. Paul road in Montana has been translated to mean that the former road is considering the electrification of its lines. Among the officials who made up the party were E. M. Rine, vice-president, H. C. Manchester, chief master mechanic, J. Hills of the engineering firm of Gibson-Hills of New York City, and several General Electric Company engineers who explained the details of the road and the costs to the visitors. It is reported that the company plans to electrify what is known as Carbondale Hill, near Scranton, Pa. The first installation will cover but 30 miles of the lines, and will constitute a test section. Should it prove successful, it is understood that all of the lines of the Delaware road will be electrified.

The Spokane branch of the Federal Land Bank has been allotted \$5,750,000 by a Federal Farm Loan Board, this money to be loaned to farmers in Washington, Oregon, Idaho and Montana.

British Columbia Companies Plan Developments

Hydroelectric Projects Will Add 22,000 Hp. to Lines in Canadian Province; New Company Is Organized

Hydroelectric power developments amounting to approximately 22,000 hp. are under way in British Columbia at the present time by the British Columbia Electric Railway Company and the British Columbia and Alberta Power Company, a newly organized concern.

The latter firm, which is capitalized for \$2,000,000 by Minneapolis financiers, has established offices at Fernie, B. C., with J. C. Donald as general manager. The first plant will be located on Bull river and will consist of two 2200-kw. vertical units, operating under a head of 270 ft. The ultimate capacity of the plant will be three such units. Another plant is projected at Elk Falls, Elko, B. C., and will have a capacity of 12,000 kw. One hundred miles of 66,000-volt transmission lines will be constructed in British Columbia and between 30 and 40 miles in the province of Alberta.

Contracts have been made with the cities of Cranbrook and Fernie to supply current in bulk, and with the completion of the plants, the cities will close down the existing municipal steam

plants. Other places which will be supplied with power are Coal Creek, Michel and Corbin, together with a number of coal mines adjacent to the transmission lines.

The British Columbia Electric Railway Company is installing a fourth unit at its Stave Lake plant, which was taken over some time ago from the Western Power Company of Canada. The addition will make four 8825-kva.

The company has 150,000 hp. in undeveloped units in the plant operating under a 75-ft. head with Francis turbines. The transmission voltage is 60,000 volts. The new unit will not be in operation until February, 1922.

The company has 15,000 hp. in undeveloped power resources. One of the largest of the potential power sources is Allouet Lake, adjacent to Stave Lake. The water from this lake would be used at a plant between the two lakes, again at a new plant beside the present Stave Lake plant, and the entire volume of water again utilized in a 100,000-hp. plant three and a half miles down the Stave River.

Utah Seeks Federal Support in Reclamation Work

Plans to insure cooperation of the federal government in the development of Weber county water storage and of insuring that Utah will receive its proper share of the \$250,000,000 which is expected to be available for reclamation work, were recently discussed at an informal meeting in Ogden of the Utah Water Storage Commission and the directors of the Ogden Chamber of Commerce and Weber County Commissioners.

It was pointed out in the discussion that the Smith-McNary bill, carrying an appropriation of \$250,000,000, for reclamation work, is practically certain of passage at the next session of Congress, because both national parties are on record as favoring the appropriation for this purpose and President Harding has also promised his support.

It was argued that Utah is in a strategic position to secure a large share of this fund, because there is but one government reclamation project within its borders as compared to 15 for Idaho and a similar proportion for other western states.

Various tentative plans for several large reclamation projects were also informally discussed at the meeting.

Under the auspices of the Northwest Electrical Service League, of which Stephen I. Miller is the executive secretary, a salesmanship course, patterned along the lines of the course being conducted in Seattle at the present time, will be instituted in Tacoma. The Tacoma school will be in charge of Prof. W. A. Russell, of the University of Washington faculty. Similar courses, according to Dean Miller, are planned for Portland and Spokane.

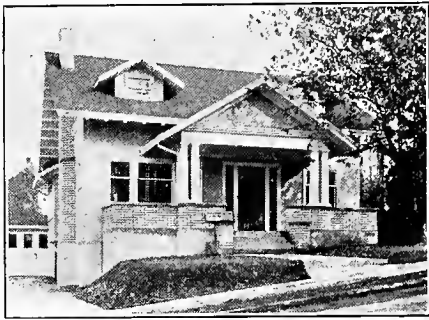


The Advisory Committee of the Rocky Mountain Electrical Cooperative League entertained the men who were responsible for the success of the Salt Lake Electrical Home at a luncheon recently. Thirty-nine members of the electrical fraternity were present. J. A. Kahn, chairman of the league, made a short address.

Astoria Gets Electrical Home

First Electrified Residence in Northwest Is Formally Opened

The first "Home Electrical" in the Northwest was opened in Astoria, Oregon, October 15, under the auspices of the Northwest Electrical Service League. The demonstration which lasted for three days was designed to show the practicability of equipping a home electrically throughout and the necessity of providing adequate convenience outlets. The house used was a neat little bungalow built by a prominent Astoria doctor and was completely furnished in addition to the electrical appliances shown. The house furnishings were furnished by Astoria merchants and the electrical equipment was supplied by Portland jobbers. The demonstration was arranged for by W. D.



The first electrical home in the Northwest is officially opened in Astoria, Ore., on October 15 by Northwest Electrical Service League.

Moriarty, field man for the Northwest Electrical Service League, and conducted under his supervision. The attendance was very heavy and the exhibition was thoroughly successful from every standpoint. It is planned to hold other demonstrations throughout the Northwest during the coming year.

British Columbia League Issues Report of Last Year's Work

Records of a successful year are set down in the first annual report of the British Columbia Electrical Cooperative Association which has been published under the title of "Electrical Cooperation." Unification of the work of the industry, a better understanding of joint problems, an electrical show, and the organization of the contractor-dealers are some of the accomplishments of the past year in the Canadian province.

Under the heading of plans for the coming year, the report contains the following announcement:

"In addition to this program of organization and education, it is the purpose of the British Columbia Electrical Cooperative Association to give attention to helping contractors and dealers to better merchandise their goods, architects to plan better electrical installations, and also to promote the electrical industry in public. By better store arrangement, better window display, better advertising, better selling plans, it is hoped to improve business generally.

"Among the other activities of the association will be the prosecution of a campaign for better street lighting, better industrial lighting, and better store lighting; better street lighting to reduce the danger of accidents in streets to pedestrian and vehicular traffic and to assist in the prevention of crime, at the same time increasing the beauty of the city at night; better industrial lighting to increase the productivity of various factories and to decrease the danger of accident to the workmen; better store light-

ing to increase the effectiveness of merchandise display.

"An industrial lighting exhibit will be opened in Vancouver at an early date and steps will be taken to promote this branch of the business both among the trade and among local industries.

"In the spring months it is proposed to exhibit an Electrical Home which will educate the public to the increased use of electrical appliances and modern methods of illumination and to the necessity for stipulating increased convenience outlets in their specifications."

Propose to Increase Industrial District of San Francisco

Active work on the proposed scheme for the leveling of Rincon Hill in San Francisco for the providing of a new industrial and manufacturing section, is forging ahead rapidly according to an announcement from the Chamber of Commerce. The scheme calls for the removal of the present hill, thereby adding fifteen city blocks or 85 acres to the already cramped industrial section. The estimated cost of the work will be \$4,000,000 and two years will be required to complete it. The district is adjacent to the mercantile and financial districts of the city and is provided with excellent rail and water facilities.

The project has been endorsed by every civic and commercial organization in San Francisco and has already received the approval of the Board of Supervisors in committee and will shortly be placed before that body officially.

What comprises the largest railway electrification contract ever undertaken by an American firm outside of the United States has been signed by the Chilean Government and the Westinghouse Electric International Company, calling for the electrification of the state railroad between Valparaiso and Santiago. The contract, which amounts to \$7,000,000, calls for eleven passenger locomotives, fifteen freight locomotives, seven switch engines and five substations of 4000 kw. each. The line will operate under a 3000-volt direct current system.

Working on the theory that additional benefit can be secured from national advertising campaigns provided the local jobbers and dealers link their activities along the same lines, a move has been instituted in Los Angeles by the Illinois Electric Company to tie in local advertising with the national campaign of the Westinghouse Company to boost Christmas sales. A series of advertisements will be placed in the Los Angeles papers by individual dealers and jobbers calling the attention of the public to national promotion campaigns in magazines and trade journals. H. E. Sherman, sales manager of the Illinois Electric Company, is particularly pleased with the initial results of the undertaking.

The "wonder cave," one of the most picturesque and interesting caves in the United States, which was recently discovered by Wasatch forest officials near American Fork, Utah, is to be electrically lighted. A total of \$250.00 was subscribed at a mass meeting at Pleasant Grove for wiring the cave.

Books and Bulletins

THE AMERICAN ELECTRICIANS' HANDBOOK

By TERRELL CROFT. Second edition, revised and enlarged. Flexible Karatol, 7 by 4 1/4, 800 pages, 900 illustrations. Published by McGraw Hill Book Co., Inc., New York.

A popular handbook which has been completely overhauled and rewritten to comply with present day ideas and practices. The author has succeeded in presenting material which is both useful and practical as well as devoid of complicated and higher mathematics. The volume comprises six divisions, Fundamentals, Generators and Motors, Outside Distribution, Interior Wiring, Transformers and Electric Lighting.

Duff A. Abrams, professor in charge of the research laboratory of the Lewis Institute, Chicago, has written an interesting paper on "The Effect of Hydrated Lime and Other Powdered Admixtures in Concrete" which has been published as a bulletin by the Institute. The paper is the result of exhaustive tests which have been under way since 1914. The discussion is fully illustrated with charts and tables setting down the results of these tests.

"C-H Elevator Controllers" is the title of a 40-page book just published by The Cutler-Hammer Manufacturing Company.

In addition to a description of the various C-H elevator controllers and accessories, the book contains a discussion of the types of motors best suited to elevator work and an outline of the usual method of selecting motors of the right horsepower and starting torque to insure satisfactory performance. Tables giving motor, fuse, and wire ratings are also included. An index makes it easy to turn to any particular section.

In order to completely list and describe the manufactured products of the Westinghouse Electric & Manufacturing Company, a new edition of their general catalog has been issued. The catalog contains more than 1,300 pages, and is divided into twenty-four main sections, each being thumb indexed. All apparatus and equipment manufactured by the company is listed and described and each section begins with a descriptive introduction of the application and use of the articles listed. The introduction contains information of value to the engineer, contractor and dealer.

The Giant Energy Electricity

The National City Company has recently issued an attractive booklet with the title "The Giant Energy Electricity" which describes in simple terms the pertinent facts concerning the growth and development of the electric service industry and tells something of the present status and the future prospects. The object of the booklet is to present these facts in such a way that an investor will have the essentials upon which to base an opinion as to the desirability of the stocks and bonds of the electric service companies as investments. The text is illustrated by charts and photographs which clarify the story.

Meetings of Interest to Western Men

First Annual Meeting of Northwest Association

The British Columbia Electrical Co-operative Association celebrated the fulfillment of the first year of activity at a banquet held in Vancouver on October 12. One hundred and fifty electrical men from all parts of the province attended the meeting and proclaimed their support of the association for the coming year.

George Kidd, general manager of the British Columbia Electric Railway Company, presided over the gathering while Stephen I. Miller, executive manager of the Northwest Electric Service League, was the guest of honor and principal speaker.

Other speakers were W. W. Fraser, president of the Vancouver Association Contractor-Dealers; H. Pim, local manager, Canadian General Electric Company; and E. E. Walker, sales manager, B. C. Electric Railway Company. At the head of the table sat J. F. Little, local manager, Northern Electric Company; J. R. Read, local manager, Canadian Westinghouse Company; J. Lightbody, publicity manager, B. C. Electric Railway Company; Rey E. Chatfield, secretary-manager, B. C. Electrical Co-operative Association; E. Brettell, Electric Supply and Contracting Company; C. C. Carter, electrical contractor; George Horsman, E. B. Horsman and Son, jobbers; J. C. Reston, secretary, Contractor-Dealers' Association; W. C. Mainwaring, district sales manager, Northern Electric Company; F. R. Glover, general executive assistant, B. C. Electric Railway Company.

Telegrams of congratulation were received from Robert Sibley, editor of the Journal of Electricity and Western Industry, and M. K. Pike, general sales manager of the Northern Electric Company, Montreal.

The Engineers' Club of Seattle, maintaining quarters and clubrooms in the Arctic Building, Third Avenue and Cherry Street, has completed negotiations for leasing the College Club Building, Fifth and Seneca Streets, and after the first of the year will move to the new location. In acquiring these new quarters, the Engineers' Club is placing itself more on a par with similar clubs in other large cities in the U. S. and has in mind the centering of all engineering interests in this city and in the Northwest in its new home.

The November meeting of the Southwestern district, Oregon Association of Electrical Contractors and Dealers, will be held in Grants Pass. Included in this district are the dealers of Klamath Falls, Ashland, Medford and Grants Pass.

President Harley W. Brundige of the California State Railroad Commission was a most interesting speaker before the last meeting of the Los Angeles Chapter of the American Association of Engineers.

California Electrical Bodies Have Busy Season

Activities of the various electrical organizations in Pacific Coast cities are in full swing for the winter season. In San Francisco, the Electrical Development League is busy with plans for the proposed Engineers' Building and the coming Industrial Exposition. During the past two weeks, meetings emphasized the rapid development of radio telephony in the West, and the Pit River Development of the Pacific Gas and Electric Company. Lieutenant Ellery Stone, general manager of Atlantic-Pacific Radio Supplies Company, spoke before the members on October 17, while P. M. Downing, vice-president in charge of construction for the Pacific Gas and Electric Company, told of the Pit River project at the October 24 meeting.

In Los Angeles, the October 17 meeting was addressed by Woodworth Clum, general manager of the Better American Federation of California, on the subject of "We Are on Our Way—But Where." Elliott C. Henfel, sales manager of the Stewart Dawes Shoe Company, also spoke on "More Power in Man Power."

The Oakland Electric Club heard a discussion on the proposed charter which would consolidate the cities of Alameda county under one government on October 24. On October 17 J. K. Fairchild addressed the club on "Radio, the Electric Language."

Utah Section, A. I. E. E. Plans For Busy Season

Plans for one of the biggest years of its career are being made by the Utah Section of the American Institute of Electrical Engineers. With a membership increased from 114 to 150, six meetings will be held between October and May. Joint meetings will be held with the Utah Engineering Society. Speakers at section meetings will be drawn from visitors from the east and the west coast. Three papers are in the course of preparation for coming meetings. They are: "The Use of Electricity in Mining" by Abner Willson, master mechanic of the Utah Apex Mining Company; "The Electrolytic Production of Zinc" by John F. Ellsworth, superintendent of the Judge Mining and Smelting Company and "High Voltage Mining Installations" by Leonard Willson, consulting engineer.

The officers of the section for the

coming year follow: chairman, Paul P. Ashworth, distribution engineer, Utah Power and Light Company; secretary, C. R. Higson, assistant to general superintendent Utah Power and Light Company; junior past chairman, Dr. Joseph F. Merrill, Dean of the College of Engineering and Director of the State School of Mining, University of Utah; executive committee, H. W. Clark, Salt Lake City smoke inspector, J. A. Kahn, manager, Capital Electric Company, Robert Miller, local manager, General Electric Company, and W. A. Moser, local manager, Westinghouse Electric and Manufacturing Company.

Joint Meeting of Electrical Interests in South

The Southern California Association of Electrical Contractor-Dealers combined forces with the San Diego Electric Club and the members of the association in that city, and held a joint meeting and Hallowe'en party on October 29 and 30. Problems relative to southern California were the chief topics of discussion at the one business meeting, while the majority of the time was turned over to the entertainment of the many visitors.

The banquet was held on the evening of October 29 in the main dining room of the San Diego Hotel. Included in the list of speakers were John Bacon, mayor of San Diego; Laurie M. Klauber, general superintendent of the San Diego Consolidated Gas and Electric Company; Robert Eltringham, manager of the California Electrical Cooperative Campaign; George Colton, president of the San Diego Rotary Club; Mrs. Kate B. Vaughn, Home Economics Department, Los Angeles Express, and Jay Gould, president of the San Diego Chamber of Commerce.

There will be a group meeting of the Technical Section of the N. E. L. A. in San Francisco November 14-18, according to an announcement made by H. A. Barre, vice-chairman of the section executive committee. The following groups will meet: Electrical Apparatus, Overhead Systems, Hydraulic Power, Inductive Interference, Meter, Prime Movers, Safety Rules, and Underground Systems. S. J. Lisberger will assist in handling the meetings. This session is not to be confused with the general meeting of the Pacific Coast Division which will be held in Del Monte on November 11. Committee members and association members as well are urged to attend the section meeting.

Plans are almost complete for the mass meeting which is to be held at San Jose, Cal., under the auspices of the Santa Clara Electrical Contractor-Dealers' Association. Robert Sibley, editor of the Journal of Electricity and Western Industry, will speak.

COMING EVENTS

PACIFIC COAST DIVISION, N. E. L. A., GENERAL MEETING
Del Monte, Cal., November 11, 1921

PACIFIC COAST DIVISION, ELECTRICAL SUPPLY JOBBERS' ASSOCIATION, QUARTERLY SESSION
Del Monte, Cal., November 10, 11 and 12, 1921

GROUP MEETING, TECHNICAL SECTION, N. E. L. A.
San Francisco, Cal.—November 14-18, 1921

Ulysses S. Grant 3rd has been officially made a member of the California Debris Commission, his appointment having recently been confirmed by the Senate.

Charles C. Moore, president of Charles C. Moore & Company, consulting and construction engineers of San Francisco, is making an extended trip to various business centers of the East.

H. B. Titcomb, former vice-president of the Pacific Electric Railway Company of Los Angeles, has been chosen to fill the post of president of the Arizona Eastern and Southern Pacific of Mexico lines. Mr. Titcomb takes the place made vacant by the death of Epes Randolph, pioneer western railroad executive.

William Baurhyte, vice-president and general manager of the Los Angeles Gas and Electric Company, was chosen as a member of the board of directors of the Pacific Coast Gas Association at the recent convention of that organization.

Oscar Stern, associated with the General Electric Company of Sweden, is a recent San Francisco visitor. Mr. Stern has just made a research study of industrial conditions in Mexico and is now visiting various industrial centers of the West.

Dr. T. W. Christensen, president of the Port of Seattle Commission, was elected director of the American Association of Port Authorities at the recent international convention of the organization held in Seattle. He is known on the Pacific Coast as an ardent advocate of better harbors and more commerce. During his term in the Washington legislature, he was largely responsible for the appropriation for the dredging of Lake Washington and the passage of port legislation. He was elected port commissioner in 1918 and in January, 1921, elected president of the commission. He was born in Astoria, Ore., in 1878 and edu-



DR. T. W. CHRISTENSEN

cated in medicine. One of the outstanding features of his connection with the port commission has been the abolishment of wharfage rates, thus freeing shippers from extra charge in handling freight. He is exploiting a campaign for bringing Seattle to the attention of far eastern shippers at the present time.

Personals

H. D. Randall, Denver manager of the General Electric Company, brought a stirring message of the opening of Salt Lake Electrical Home, when he returned recently from a business visit in that city.

Dean Mortimer E. Cooley, of the University of Michigan, has been chosen to succeed Herbert Hoover as president of the American Engineering Council. Dean Cooley is a man of splendid accomplishment and is widely and favorably known to the public and to engineers. As president of the federation, he will have opportunity of rendering an even greater service to the public and to the profession.

George Armes, one of the foremost ship construction engineers on the Pacific Coast, has been named president of the ship repairing company of Mooney and Young, as well as a third partner in the concern. Mr. Armes recently resigned as vice-president and general manager of the Moore Shipbuilding Corporation.

F. W. Bradley, noted Pacific Coast mining engineer, is in Juneau, Alaska, where he is looking after the interests of the mining company which he heads.

J. Spencer Smith, vice-president of the Port of New York authorities, and R. F. Engle, of the New Jersey Board of Navigation and Commerce, recently made a detailed inspection of the inner and outer harbors at Oakland, Cal., with a view of giving suggestions for the improvement of Oakland's port facilities.

O. B. Kibele, consulting engineer, is the choice of the Mayor of Los Angeles to fill the vacancy now on the Harbor Board. If his selection is ratified by the city council it will meet with the hearty approval of the engineering profession at large. Mr. Kibele is a member of the Society of Naval Architects, the American Society of Mechanical Engineers, and of the Staff of the American Bureau of Shipping.

H. O. Adams, general sales manager for the Electric Vacuum Cleaner Company, Cleveland, is a recent San Francisco visitor. Mr. Adams is visiting the Pacific Coast offices of his company.

Guy Barker, formerly in the engineering department of the Pacific Gas & Electric Company, is now associated with the Johns Manville Company as electrical specialist with headquarters in San Francisco.

D. B. Gray of the Purchasing Agents' Association of Northern California has been named chairman of a special committee which is charged to keep in touch with all new industries which contemplate locating in the San Francisco Bay region.

Bernard R. Hensel has been selected by the Los Angeles Contractor-Dealers to represent their branch of the electrical industry on the joint committee which will direct the new activity of the California Electrical Cooperative Campaign looking toward a closer relationship with the building industry in the Southern California district.

A. W. Childs, superintendent of sales for the Southern California Edison Company, has been chosen to head the Advisory Committee of the California Electrical Cooperative Campaign following the resignation of L. H. Newbert, East Bay division manager for the Pacific Gas and Electric Company. Mr. Childs has been connected with the campaign since its earliest period and has contributed materially to the ad-



A. W. CHILDS

vancement of the movement. His wide experience gained from his connection with the merchandising department of the Southern California Edison Company has proved invaluable in the advancement of the electrical idea by the campaign. His many friends who are in touch with the cooperative movement predict a further advancement of the idea under the direction of Mr. Childs.

V. C. Grant has resigned from the position of superintendent of the Enterprise Electric Company of Enterprise, Ore., to accept the management of the Ilwaco Light and Power Company of Ilwaco, Wash.

A. T. Parsons, formerly editor of Western Engineering and later of Metal Trades, has taken the position of advertising manager for the Pelton Water Wheel Company.

Bulkeley Wells, president of the Western Colorado Power Company, was a Salt Lake City visitor on September 30th, where he conferred with officials of the Utah Power & Light Company.

George T. Hansen, for ten years Salt Lake City district manager for the Allis-Chalmers Manufacturing Company, has resigned to enter private business. E. N. Greenleaf, who has been Mr. Hansen's assistant, will be the new district manager. Mr. Hansen will devote his time to the practice of mining engineering.

R. J. Lyman, president of the Great Western Meter Company, San Francisco, has announced that his company is completing a manufacturing plant in Emeryville, Cal.

Lloyd P. Joubert, formerly with the Todd Dry Dock and Construction Company, is now electrical engineer with the Tacoma Lighting Department.

R. L. Wildauer, western manager for the Arrow Electric Company with offices in Chicago, is visiting in San Francisco in the interests of his company.

George H. Krueger, formerly with the Anderson Draft Regulator Company, has opened offices as a mechanical engineer in Seattle.

A. M. Morrell, formerly purchasing agent for Nordyke & Marmon Company, Indianapolis, is now sales engineer with the Edward R. Ladew Company with offices in San Francisco.

Robinson Farmer, secretary of the Southern District, California State Association of Contractors and Dealers, and **A. L. Spring**, special representative of the California Electrical Co-operative Campaign, have taken new quarters in 742 Title Insurance Building, Los Angeles. The central location and splendid additions to office equipment will greatly facilitate the important work of these offices.

James E. Barker, consulting electrical engineer of Los Angeles, reports that in some recent installations of highway lighting which he is supervising, provision has been made to change the systems to ornamental street lighting. This change can be effected any time the future development seems to warrant, without sacrificing any equipment now in service, according to Mr. Barker.

T. D. MacMullen, secretary and sales manager of the Majestic Electric Development Company of San Francisco, is heading the committee of men of the industry, which is going to show San Francisco a real electrical exhibit in the coming Industrial Exposition. Mr. MacMullen is a member of a company unique in the industrial history of the West. Organized in 1914 when electrical heating was in its infancy, the company now has a factory branch in the manufacturing district of Philadelphia. Under his direction as sales manager, the reflector type of heater has been popularized. Mr. MacMullen



T. D. MACMULLEN

does not devote all of his time to his business for he is a member of eleven committees working for the betterment of San Francisco and the electrical industry. He is active in the affairs of the Chamber of Commerce, the Electrical Development League, the N. E. L. A. and the California Electrical Co-operative Campaign.

Norman B. Roper, who recently resigned as general manager of the Sociedad Minera Backus y Johnston del Peru, of Casapalca, Peru, has returned to his former home in Los Angeles.

N. B. Baer, formerly chief clerk of the traffic department of the Bamberger Electric Railroad, Salt Lake City, has been appointed general soliciting agent for the road. Mr. Baer has been in the employ of the company for the past five years. The position of chief clerk will be filled by Loney Flint, a newly added member to the personnel of the road.

W. D. Boone, of Dinuba, and **D. Joseph Coyne**, of Los Angeles, have been appointed by Governor W. D. Stephens to serve as executive directors for the State Engineer in the administration of the new California water storage district act.

Dr. M. Shibusawa, electrical engineer with the Electrical Exploitation Bureau, Ministry of Communication, Tokyo, Japan, is a recent San Francisco visitor. Dr. Shibusawa has visited the United States several times before in his study of hydroelectric development of this country and is now on his way to London, England, where he will spend several months in the British capital before returning to his home in Japan during March of next year. He is accompanied by **Y. Oana** of Asakusa, Tokyo Japan, a fellow electrical engineer.

Lewis M. Clement, graduate of the University of California with the Class of 1914, has contributed an interesting and instructive paper to the proceedings of the Institute of Radio Engineers on the subject of the Avalon-Los Angeles Radio Toll Circuit. It will be recalled that one may now telephone from any part of the United States over to Avalon, Catalina Island, the message being transmitted by telephone and then by radio across the water between Catalina and the mainland.

J. H. Sroufe, of the Jaggar-Sroufe Company of Portland, and president of the Oregon Association of Electrical Contractors and Dealers, attended the recent state convention of the Washington Association of Electrical Contractors and Dealers, at Yakima, Washington.

H. Fulwider, industrial engineer for the General Electric Company with headquarters at Schenectady, N. Y., has been making a coastwide survey of industrial conditions. Mr. Fulwider returns to his home office enthusiastic over the prospects of industrial development in the West, regarding which he says, "Neither eastern people nor even those in the West realize to the fullest extent the immense industrial development which is going on here."

E. G. MacDonald has recently been appointed assistant superintendent of electric generation for the Los Angeles Gas and Electric Company. Mr. MacDonald was associated with the Great Western Power Company as superintendent of the steam plant department in Oakland for ten years. For the last three years he has had supervision of the test and trial work for the Los Angeles Shipbuilding Company.

T. L. Holmes, of the Western Electric Company, has been appointed manager of the Boston Telephone Distributing House of that company. He held a similar position in Denver. **H. H. Argabrite**, formerly stores manager of the Denver house, will succeed Mr. Holmes as manager.

Fred Norcross, secretary and general manager of the Home Gas and Electric Company, Greeley, Colorado, is the new president of the Colorado Electric Light, Power and Railway Association, having been chosen to that post at the recent convention of that organization with the Rocky Mountain Division, N. E. L. A., at Glenwood Springs. Mr. Norcross started his electrical career as a telegraph operator in 1889 and



FRED NORCROSS

was later train dispatcher for the Union Pacific Railroad. Subsequently he was chief dispatcher for the Colorado and Southern Railroad and was later appointed to the position of train master and assistant superintendent of the St. Louis and San Francisco lines. In 1913 he was appointed manager of the central station of the Home Gas and Electric Company at Greeley and later to the place he now holds. His many friends in the Intermountain district are predicting a full year for the organization which he heads.

C. A. Malone, formerly with the California-Oregon Power Company, has become assistant superintendent of the Hawaiian Electric Company, Ltd., Honolulu, Hawaii.

Obituary

Perry Haviland, well known throughout the West as a civil engineer, and county engineer of Alameda county, died recently in San Francisco. For many years Mr. Haviland was associated with the firm of Haviland, Dozier and Tibbitts, and did pioneer work on several of the reclamation projects of Northern California. His death will be a distinct blow to the engineering profession.

Ralph E. Robson, associated with the engineering firm of Cope, Rand, Means & Company of San Francisco, was killed in an automobile accident recently while driving over the work on which he was engaged in Northern California. Mr. Robson, well known in California engineering circles, gained an enviable reputation for his service with the engineering corps of the A. E. F., in which he served as a major. His death came as a great blow to his many friends and associates.

The Hudson Electric Company has taken over the business of the Uhlig Electric Store at Roseburg, Ore. Mr. Hudson was formerly with the Stubbs Electric Company at Portland.

R. E. Herman of the S. and H. Electric Company of Alhambra, Cal., says he was sorry when the four day trade exposition recently closed in his city. From 3000 to 5000 people visited their booth every day and they sold two sewing machines, two washing machines and an electric range, together with many small devices. They will take three times the space at the next show.

The Southwestern Electric Company of Redlands, Cal., has grown during its fifteen years of "Service That Pleases" to where H. B. Jenkins sought the assistance of W. G. Clark, an electrical engineer as a partner in the firm. Mr. Clark was connected with the "Better Service Department" of the Edison Company in Redlands and is well fitted to assist in an enlarged campaign of good electrical merchandising. They are at present pushing the Westinghouse range and heating device campaign.

Glenn Arbogast is receiving the congratulations of his friends for the wonderful job of store decoration and rearrangement which he has just completed in his Olive Street store in Los Angeles. Glenn modestly admits spending \$5,000 to achieve his ideal; the store reflects credit to its owner even in the midst of the exclusive shopping district where it is located.

The Engineering and General Supply Company, Los Angeles, of which J. G. Monohan is manager, have been appointed as representatives of the Esterline-Angus Company for Southern California. C. F. Henderson, Pacific Coast representative for the company states that it has been necessary to further divide up the territory to take care of the increasing business of the Esterline-Angus lines.

The Rockwood Manufacturing Company of Indianapolis, Ind., have secured the Buzzell Electric Company as their western representatives in the distribution of Rockwood paper pulleys. This specialty line will be in direct charge of Mr. Noble of the latter organization.

C. G. Gauntlet, Pacific Coast manager of the Safety Insulated Wire and Cable Company, with offices in San Francisco, recently left for a three months' trip to Europe.

The White Costello Electric Company of 694 Willametta St., Eugene, Ore., was recently organized. The firm specializes in the sale and installation of farm lighting and pumping plants.

The S & H Service Electric Company, 5 So. Garfield Ave., Alhambra, Cal., is constructing a new building which will greatly increase the business facilities of the company. The firm recently established a branch at El Monte, Cal., and is planning further extensions. R. E. Heerman is manager of the company.

Warren F. Clark, general manager of the Automatic Electric Heater Company, Warren, Pa., is visiting the Pacific Coast where his company is planning to establish a factory branch to handle Sepco electric water heater business for the western territory.

Manufacturer, Dealer, and Jobber Activities

The Doble Engineering Company, Boston, have recently perfected two devices which will be placed in Pacific Coast markets after the first of the year. One is a new insulator tester while the other is a safety portable telephone for use on high tension lines.

Edward Whaley, manager of the Northern California Power Company, which furnishes power to Glenn, Shasta and Tehama counties, recently visited Los Angeles. Mr. Whaley is interested in the development of Honey Lake Valley, where he is acting as general manager of the Eagle Lake Land Company, which is installing a new irrigation system in the district.

A. G. Humphrey has organized the Humphrey Engineering and Construction Company with offices in the San Fernando Bldg., Los Angeles. For the last three years Mr. Humphrey has had charge of the electrical and mechanical equipment of the Southwestern Shipbuilding Company.

The Cahn-Forster Electric Company of Denver has recently moved into new quarters at 1524 Glenarm St.

The Standard Thermometer Company, of Boston, has perfected a device known as the Standard Semaphore for simplifying transformer load tests. The device has won wide recognition from New England engineers for its accuracy in determining transformer temperatures.

The Cutter Company, Philadelphia, have issued descriptive literature of their new types of "U-RE-LITE" circuit breakers for protection from overload.

C. M. Snyder, sales manager of Walker Bros. Co., Syracuse, N. Y., manufacturers of an electric dishwasher, is visiting the Pacific Coast in the interests of his company's product.

The P. A. Geier Co., Cleveland, manufacturers of the Royal Electric Cleaner and other appliances, have perfected a sales aiding container for a new "Special" model for their Royal Vibrator. The container utilizes the cover space for display advertising literature when open on the counter.

The Moss-Schury Manufacturing Co., Detroit, Mich., are awaiting the Underwriters' approval of a new repeater household fuse which they have perfected, before placing the article on the market. The type embodies six fuses in one.

E. L. Callaghan has been recently appointed sales manager of the Westinghouse Lamp Company, to succeed Elliot Reid who has resigned. Mr. Callaghan formerly represented the company as district manager of the Chicago offices.

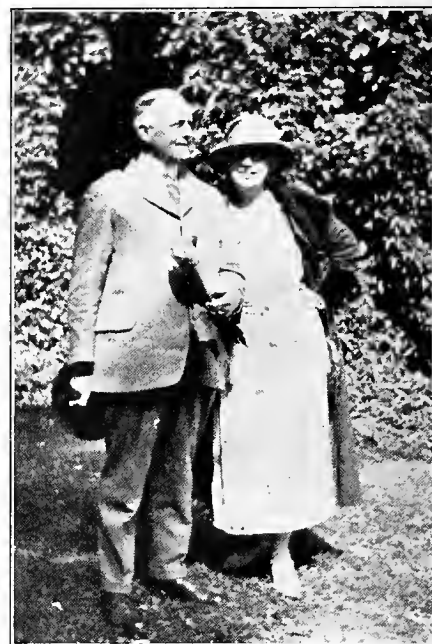
The Apex Electrical Distributing Company, Cleveland, have purchased the rights of the Gould ironer and are manufacturing it under the name of the Rotarex Home Double Roll Ironer. The ironer is a unique addition to the company's line of other household appliances.

The Oregon Association of Electrical Contractors and Dealers, through the activities of its membership committee, has secured the following firms as new members of the association: Westersund & Gustafson Electric Co., of Astoria; S. L. Bailey Electric Co., of Eugene; G. W. Rouse Electric Co., of Portland, and the Hudson Electric Co., of Roseburg.

The Remler Radio Manufacturing Company and the Audiotron Sales Company, of which E. T. Cunningham is manager, announce that they have moved their offices and factory to No. 248-250 First Street, San Francisco, Cal. The new quarters afford greatly enlarged manufacturing facilities as well as large light offices and salesrooms.

D. C. Gore, sales engineer for the Greene Electric Furnace Company of Seattle, was a recent visitor to Southern California. Mr. Gore aside from looking after new business was interested in the recent installations of electric furnaces by his company for the Los Angeles Foundry and also the Hanford Iron Works at San Bernardino.

Quinton, Code, and Hill, consulting engineers of Los Angeles, have been devoting much time to the application of electric pumping for draining irrigated land where insufficient natural drainage threatened the destruction of crops. As a result of experiments which have been conducted on a large scale in the Salt River Valley they recently received an order for 19 Layne and Bowler turbine well pumps from the Water Users' Association which controls the Roosevelt Dam and the irrigation system of the Salt River Valley.



SMILES

Here is John J. Cooper of Denver and Mrs. Cooper. When not too busy acting as secretary-treasurer of the Denver Electrical Cooperative League, Mr. Cooper finds time to attend to the affairs of the Mountain Electric Company of which he is president and manager. Mr. Cooper is noted for his pioneering of new products in new territory and has been labeled by his associates as a "go-getter." He seems to have got her.

Business Outlook in Western Market Centers

Reflecting the Trend of Community Thought on Conditions and Events Affecting
Business and Industrial Activities Throughout the West

Compiled and edited for the Journal of Electricity and Western Industry by correspondents in all principal Western cities.

BUILDING PERMITS AND BANK CLEARINGS FOR SEPTEMBER IN SIX WESTERN CITIES

	No of Permits	Value	Bank Clearings
San Francisco	631	\$2,100,163	\$551,600,000
Los Angeles.....	3,931	8,303,665	336,748,000
Spokane	268	202,460	48,221,000
Seattle	1,146	1,355,430	131,887,000
Portland	1,571	1,789,195	141,181,000
Salt Lake City.....	125	251,560	52,574,000

SAN FRANCISCO

Marketing of the crops of the country tributary to this city progressed favorably during the past month. The resumption of building activity following the cessation of the building trades strike is reflected in the September building returns. During the month 631 permits were issued with a valuation of \$2,100,163, compared with 381 permits valued at \$1,316,937 issued during August. Although the demand for skilled labor in the building trades has improved, and the harvesting of the later crops has absorbed some transient labor, the total number of unemployed has not been materially decreased. Wholesale and retail trade are reported as improved and collections as good.

Shipping conditions are improving. Cargo space on steamers bound for the Orient is booked as far ahead as December 15th. Two new steamship lines have announced their intention of including San Francisco as a port of call.

LOS ANGELES

A new record was set in September in the number and value of building permits issued. A total of 3,931 permits with a valuation of \$8,303,665 were issued. It is estimated that fifty per cent were for the construction of one-story dwellings, twenty-five per cent for two-story dwellings, the remainder being for business and industrial building. A slight increase is reported in employment in industrial plants. Retail trade is reported as quiet, wholesale trade as fair and the automobile trade as more active.

The recent rise in the price of raw cotton has brought relief to the growers and the interior banks in the Imperial Valley and has opened up the first real movement of long-staple cotton in Arizona since last year.

SALT LAKE CITY

Returns from crops marketed have materially relieved the credit situation in the Intermountain district. For the first time in more than a year and a half the customary rate charged customers by banks in the leading financial centers is reported to be 7½ per cent instead of 8 per cent. The funds received from early and heavy sale of

agricultural products this season have apparently supplied the credit need which in normal years is met by an increase in bank borrowings at this season.

The cessation of harvest activities in the rural districts has increased unemployment slightly. Activity in flour milling has increased substantially due to a reported increase in both foreign and domestic demand for flour.

DENVER

Machine industries in Denver continue on a restricted basis due to lack of orders. Clay and cement products have slightly improved. Miscellaneous industries are sluggish. A slight gain is noted in building activities but is generally restricted. Public improvement prospects are somewhat brighter though no important increase is likely in the near future.

Unemployment is gradually decreasing in the state due to harvest activities principally. Improvement in the coal mining districts is temporarily retarded by controversies.

Due to warm weather which has prevailed thus far during the fall, dry goods and clothing stores are not selling winter clothing as speedily as they would like. The warm weather has also served to slow up the sale of coal and Denver coal retailers report business below normal in their line.

It is the opinion of those in close touch with the situation that business will continue to gain slowly.

SPOKANE

One of the most encouraging features of the business outlook this month is the increased lumber business, as more inquiries and a largely increased demand have been features of the business for some weeks.

Other favorable factors for this region are the wheat and apple crops. The former is computed to be 87,000,000 bushels, an increase of 14,000,000 bushels over 1920, and the apple crop is estimated at 25,455,000, an increase of 44% over last year. Retail dealers report more goods going over their counters than at this time a year ago and jobbers also report improvement. Altogether, there is a distinctly brighter atmosphere which has for its basis a perceptible business improvement.

SEATTLE

The improvement in the lumber industry, occasioned by heavy cargo-buying and unusual buying by retailers, has forced new business totals to the highest point reached within the last two years.

Logging operations are now proceeding at approximately 75 per cent of capacity and the situation is distinctly improved over that which prevailed one month ago. Many operators are opening camps for fall operations in order to accumulate a surplus of logs before the customary closed period in the winter months.

The salmon situation shows continued betterment. The pack for the year is small, but recent strengthening of the market is evidenced. Retail trade still enjoys seasonal activity occasioned by fall buying, and wholesale trade has quickened in many lines. Collections continue in good volume against outstanding accounts.

PORTLAND

Business generally in Portland and surrounding territory continues to improve and indications are that October will surpass September which was the banner month of the year so far. Lumber and wheat continue to move in large volume through the port and a full cargo of apples has just left for Europe consisting of approximately 80,000 boxes. More lumber mills and logging camps are resuming operations and some mills are now running on a three-shift basis. Unemployment as yet is not causing any great concern.

Electrical interests report business as continuing good. The seasonal movement on heaters, lamps, etc., has begun with the coming of the rainy season. Ranges are beginning to move as a result of an active range campaign recently put on by the two central stations serving Portland.

The outstanding event of the past two weeks was the opening of the first Home Electrical in the Northwest at Astoria, Oregon, October 15, under the auspices of the Northwest Electrical Service League. The showing was a complete success and the attendance unusually good.

Apple shipments are growing rapidly, but not many car-lot sales are being made at shipping points. The bulk of the fruit is being consigned to Eastern aucitons or will be stored in the middle West to take advantage of the storage-in-transit privileges. Heavier prune orders are being booked and as a greater proportion of the crop this year runs to the larger sizes, the sellers are obtaining substantial premiums over the opening base prices.

Construction News and Industrial Developments

Suggesting to the Engineer, Contractor, Manufacturer, Dealer, Agent and
All Business Men Opportunities for New Business

THE PACIFIC NORTHWEST

ASTORIA, ORE.—Business men of Astoria plan to erect a fine hotel in the city to cost \$400,000.

OROVILLE, WASH.—It is reported that the Okanogan Valley Power Company is considering the addition of a second unit to its hydroelectric station on the Simulkameen river during the next year.

PORTLAND, ORE.—Construction of a concrete stadium to cost \$400,000, in the natural amphitheatre of Multnomah field, with a view to its being available for the 1925 Exposition, seems assured.

ALBANY, ORE.—The city of Albany plans to make extensive improvements to its fire alarm system by the addition of a motor generator, batteries, switchboard and rewiring of the overhead circuits.

WALLA WALLA, WASH.—Bids have been called for, for the construction of a steel bridge, 3260 feet long, to cost approximately \$400,000, over the Columbia river between Benton and Franklin counties.

TACOMA, WASH.—The plant of the Pacific Stove and Stamping Co. which was recently damaged by fire to the extent of \$50,000 will be rebuilt at once, according to T. M. Eggers, president of the company.

THE DALLES, ORE.—Stevens & Koons, Portland engineers, have been employed by the water commission here to make a thorough investigation of the water system. New improvements will depend upon their report.

ROSEBURG, ORE.—A special election has been called for Nov. 1 to vote on the acceptance or rejection of an authorization to the city council to issue bonds in the amount of \$500,000 for the purpose of acquiring a water and light and power system.

SEATTLE, WASH.—W. H. Perry of N. E. Perry Co., announces the purchase by his company of a townsite at Boston Harbor, seven miles from Olympia, from C. D. Hillman, at a cost of \$250,000. A mill will be built for cutting lumber for development.

WASHINGTON, D.C.—The Bureau of Yards and Docks, Navy Department, is preparing Specification No. 4533 for a 300-ft. radio tower to be erected at Eureka, Cal., also for a 200-ft. radio tower at Keyport, Wash., under Specification No. 4538.

SPOKANE, WASH.—General George W. Goethals, builder of the Panama Canal, will be asked by the Columbia Basin committee to come to Spokane to design plans for the Columbia Basin Irrigation project, said to be the largest undertaking of the kind in the country.

WASCO, ORE.—The Sherman Electric Company, a local organization, began supplying service to the towns of Wasco, Moro and Grass Valley, on September 30, over its new high tension line which taps the Pacific Power & Light Company's transmission line near Dufur.

WAITSBURG, WASH.—James Allen, state highway commissioner, has suggested that Walla Walla county vote about \$135,000 in bonds to complete present concrete paving between Waitsburg and Walla Walla on the route to the proposed new bridge across the Snake river at Central Ferry.

SALEM, ORE.—The town of Milton, Oregon, has applied to State Engineer Copper for a per-

mit to appropriate 82 second-feet of water from Walla Walla river to develop electric power. It is intended to generate 1700 hp. under a head of 190 ft. A forebay, dam and pipe line will be included in the project.

PORTLAND, ORE.—The following have incorporated: Farmers' Cooperative Light and Power Co., of Olympia, Wash., incorporated by A. G. West, W. R. Taylor, R. Gerth, C. E. Conn and Elmer Walker, for \$10,000; Gravity Electric Switch Co., of Portland, incorporated by B. J. Hecker, Frank Lucas, and Dick Miller, of Portland, for \$50,000. Will engage in the manufacture and deal in gravity and electrical switches and automobile accessories.

THE INTERMOUNTAIN DISTRICT

SAND POINT, IDA.—It is reported that John Belin of this city will open and operate a match block factory, calling for an initial investment of \$80,000.

COEUR D'ALENE, IDA.—Erection of a modern factory here seems assured with the incorporation for \$56,000 of the Coeur d'Alene Box & Manufacturing Co.

MONTPELIER, IDA.—Work is now progressing on the installation of an enlarged and improved street lighting system on Washington Avenue, extending from the Oregon Short Line depot to Eighth Street.

KEMMERER, WYO.—Permission to erect a dam in the narrows of Star valley to impound approximately 100,000 acre-feet of water has been issued by State Engineer Frank C. Emerson to the Oswald Basin Land & Water Company.

RENO, NEV.—John F. Richardson, manager of the Newlands Reclamation Project, has announced that as soon as plans are approved by Washington, work will commence on the construction of the Spanish Springs reservoir which will impound water for irrigating 70,000 acres of fertile land near here.

POCATELLO, IDA.—Officials of the Wilbert Mining Company have made arrangements with the town council at Arco for connecting with the Arco power transmission line at Howe. The mining company will construct its own line from the mine to Howe. A new concentrator will be erected at the Wilbert mines within the very near future.

SALT LAKE CITY, UTAH.—Lewis Blattler, F. M. Lyman, Jr., E. T. Howard, Martin Jensen and Edward Engle of Salt Lake City have made application to the state engineer for the diversion of 6000 acre-ft. of water from Huntington river, in Emery county, for the purpose of irrigating 6000 acres of land in that county, the water to be stored in a dam constructed of earth and to be 100 ft. in height.

THE PACIFIC CENTRAL DISTRICT

SELMA, CAL.—A bond election will be held on November 8 for the erection of a new \$350,000 high school here.

MADERA, CAL.—Bids on a well turbine pump of 1200 gal. per min. capacity will soon be called for by the city trustees.

ALAMEDA, CAL.—C. E. Hicks left Oct. 13 for various cities in the East to inspect garbage incinerators. Alameda will build an incinerator about Jan. 1st.

SANGER, CAL.—Contract for a new packing house has been awarded to A. Da Mant by the directors of the Sanger Citrus Association.

MERCED, CAL.—November 7 is the last day for receiving bids for the installation of the \$300,000 street lighting system in this city.

SACRAMENTO, CAL.—The California Highway Commission has begun excavations for its \$250,000 industrial plant which is to be located here.

VALLEJO, CAL.—Charles J. Hurrie, 1001 Pine St., San Francisco, has conferred with local business men regarding the erection of a glass factory here.

SACRAMENTO, CAL.—The board of education has announced its intention to erect a new grammar school to be known as the Bret Harte School. Plans are being drawn.

PARLIER, CAL.—Bids are being received for a \$150,000 union high school, the plans and specifications for which are on file with the Fresno county board of education.

EUREKA, CAL.—The city of Eureka has taken over the Humboldt Transit Company's electric street railway system. Improvements amounting to \$50,000 will be made.

MAXWELL, CAL.—Bids are being asked for on a new \$85,000 high school to be erected here. Plans and specifications are on file with the secretary of the board of education.

SAN FRANCISCO, CAL.—A building permit has been issued to Dunn, Williams and Co. for the erection of an \$80,000 class C office building. MacDonald and Kahn are the contractors.

TRACY, CAL.—A large milk condensery will be built here immediately at a cost of approximately \$70,000. Frank S. Glass of Oakland is head of the company putting up the plant.

SACRAMENTO, CAL.—Plans are almost complete for the new Sutter Hospital to be erected at L and Twenty-eighth streets at a cost of \$500,000. Local doctors are backing the plan.

BERKELEY, CAL.—W. W. Whitecotton, proprietor of the Whitecotton Hotel here, announces that a site has been purchased for the fifteen-story \$750,000 hotel which he will build immediately.

SACRAMENTO, CAL.—R. T. Crane, head of Crane & Co., Chicago, wholesale plumbing and fixture house, announced that plans are being prepared for the erection of a four-story \$100,000 branch plant here.

SACRAMENTO, CAL.—Plans are being prepared by the State Department of Public Works for the \$175,000 state printing plant which is to be erected on a site recently purchased at Eleventh and O streets.

SAN FRANCISCO, CAL.—A building permit has been issued to Miss Riccardi for the construction of a \$100,000 modern apartment house at Spruce and Washington streets. Evans & Co. are the contractors.

SACRAMENTO, CAL.—The McGillivray Construction Company has been awarded the contract for the construction of the \$125,000 refrigerator plant which is to be erected here by the Virden Packing Company.

SACRAMENTO, CAL.—W. A. Latta, representing the Motor Carriers' Terminal, Inc., has announced that the company will immediately erect a \$100,000 stage terminal and garage at the corner of Fifth and I streets.

SAN FRANCISCO, CAL.—Bids are being received by G. A. Lansburgh, architect, for the electrical work for a class A theater building

to be erected on Mission Street, near Brazil Street, this city, estimated cost \$100,000.

SANGER, CAL.—Representatives of the River Bend Gas & Water Co. will appear before the trustees at their next meeting to ask for a franchise. Detailed surveys have been made and it is expected that work will start soon.

COLFAX, CAL.—B. C. Soule, owner of a large tract of timber on the Forest Hill divide, has announced that a lumber mill, completely electrified, is to be erected on his property in the near future. Approximately \$150,000 will be spent on the plant.

SAN FRANCISCO, CAL.—The Pacific Embroidery Co., 150 Sutter St., will shortly have plans prepared for a four-story class C factory to be erected on the northwest corner of Mission and 13th streets. An architect has not yet been selected.

PORTERVILLE, CAL.—The Portland Cement Co. has purchased 640 acres of lime and shale land near Springvale, where it is proposed to establish a 2000-bbl. daily capacity cement manufacturing plant, according to Chas. S. Woody of San Francisco, who arranged the deal.

SAN JOSE, CAL.—The San Jose Spray Manufacturing Co., formerly called the Butcher Co. of Hood River, has begun the erection of a factory at Stockton and Emery streets, San Jose, where an investment of \$50,000 will be made in perfecting the fruit spray. J. C. Butcher is head of the firm.

OAKLAND, CAL.—The California Car Co., recently organized for the purpose of manufacturing a gasoline railway car, has secured a permit for the sale of stock. Arrangements are being made for a shop in Richmond where an experimental car will be built. A. D. Bowen is head of the concern.

BERKELEY, CAL.—A deal has been consummated whereby Berkeley will secure a new \$125,000 industrial factory known as the Veneer Works, of which H. B. Thornton is president. Building on the first unit of the plant will start immediately. The concern has been established in Sacramento for several years.

SAN FRANCISCO, CAL.—The Aircraft Transportation Co., recently granted articles of incorporation, with a capital stock of \$1,000,000, proposes to connect San Francisco by air passenger lines with virtually every city on the Pacific Coast and west of the Rocky Mountains, it is reported. F. H. Wilson, Frederick Boninion, Walter Snook and Edward J. Stratton are directors of the concern.

MERCED, CAL.—F. H. Van Hook, accompanied by Engineer H. G. McMillan, has outlined plans contemplated for the development of the extensive lime deposit at Jenkins Hill in the Merced River canyon above Bagby, for fertilizer purposes. It is estimated that 600,000,000 tons of lime is available. Shipment will be made via the Yosemite Valley railroad to Merced, where a mixing plant will be located.

THE PACIFIC SOUTHWEST

PHOENIX, ARIZ.—A total of \$350,000 will be expended for flood protection on Cave Creek, 24 miles north of the city, if present plans mature.

NOGALES, ARIZ.—A \$2,000,000 irrigating dam is to be built by the Mexican government at Altar where surveys for a damsite are now being made.

HERMOSA BEACH, CAL.—The city trustees are preparing plans for Hermosa Avenue improvement which will include an adequate ornamental lighting system.

INGLEWOOD, CAL.—The Hicks Dovetail Latch Co. has purchased 2½ acres north of the depot where a building will be erected for the manufacture of their product.

OXNARD, CAL.—The board of trustees has adopted a resolution of intention to create a lighting district. About 80 concrete ornamental posts with large globes will be erected.

LOS ANGELES, CAL.—The Los Angeles Electric Works with a capital of \$25,000 have been incorporated here by Joseph F. Devin, John R. Laying, J. M. Devin, L. S. Farmer and R. H. Gale.

LOS ANGELES, CAL.—The erection in this city of a large cotton textile mill is being planned by the Pima Textile Industries, a large Arizona syndicate, according to reports. Shane Morgán heads the enterprise.

BAKERSFIELD, CAL.—The new county hospital and home for the needy will be authorized by the Board of Supervisors as soon as definite selection of site is made. Approximately \$250,000 is available for this purpose.

SANTA ANA, CAL.—A campaign to raise \$250,000 for the Community Hospital Association will start the second week in November. Architect F. H. Eley is preparing preliminary plans for the structure and equipment.

PORTERVILLE, CAL.—The high school group to house the gymnasium and administration departments will cost \$300,000 according to Architects Coates and Traver, who are now preparing plans and specifications.

LONG BEACH, CAL.—It is proposed to call an election to vote on bonds which would provide for the expenditure of \$1,000,000 in a municipal auditorium and memorial building to the Long Beach men who fought in the World War.

LOS ANGELES, CAL.—Edward McKee, acting president of the harbor commission, is negotiating with Irving Hollman, purchaser of power bonds, to sell a block of 1921 harbor bonds so that harbor improvement may be started.

LOS ANGELES, CAL.—Theatrical interests have decided to build a new playhouse in Hollywood. The Milwaukee Building Company has been retained to draw the plans and erect the structure, which will cost \$500,000 exclusive of furnishings and equipment.

LOS ANGELES, CAL.—The Gilbert Trunk Company has contracted with Gordon La Barr, designer and contractor, for the erection of a brick and stucco factory building, near 37th and Alameda Sts. Building and mechanical equipment will cost about \$50,000.

LOS ANGELES, CAL.—Construction of a new five-unit factory by Bradley-Wise Paint Co. will be started immediately at 49th and Pacific Boulevard, to cost approximately \$75,000, according to an announcement made by E. A. Bradley, president of the company.

LOS ANGELES, CAL.—Plans are under way for a combination between the Bethlehem Steel Works and a shipbuilding company at San Pedro, it is reported, for the erection of a steel mill at Los Angeles. More than \$500,000,000 is said to be involved in the pending deal.

SAN PEDRO, CAL.—Final plans for the United States Immigration Station were approved by the Harbor Board and construction work will start as soon as the Washington authorities give their approval. The building will cost \$80,000 exclusive of special equipment.

LONG BEACH, CAL.—The Kimball Motor Truck Company is negotiating for a suitable building site for its new truck factory in this city. Not less than \$350,000 will be expended in a plant to increase the output of heavy-duty trucks, which is a specialty with this company.

SAN DIEGO, CAL.—Col. Ed. Fletcher and W. G. Henshaw are planning a power development project on Santa Ysabel creek between Ramona and Mesa Grande, which will develop 1800 hp. The project includes a masonry dam 200 ft. high, and four and a half miles of pipe line.

LONG BEACH, CAL.—The Southern California Body Co. have taken over the lease and

equipment of the California Wood Products Co., 1241-49 West First St., where they will build auto body buses, washing machines, etc. The company contemplates the erection of a factory later.

LOS ANGELES, CAL.—San Diego hotel interests are to enter the business district with a new 12-story, first-class hotel. It is understood that W. W. Paden who secured the 99-year lease on the property will erect the building, and lease to Hanner and Dancer of San Diego.

LOS ANGELES, CAL.—A new family hotel of eight stories and containing 150 apartments will be erected in one of the most desirable sections of the city where access to the business section and beauty of surroundings can be combined. Parkinson and Parkinson are the architects.

LONG BEACH, CAL.—To provide the city with an additional 25,000-telephone exchange, the Associated Telephone Company has let the contract for a three-story building to cost \$40,000 to J. W. Davison. Work has been started under the direction of W. H. Austin, architect.

PHOENIX, ARIZ.—The new Elks Club building will combine artistic lighting effects with interior furnishings in one of the most elaborate decorating schemes in the Southwest. Todd and Miller, architects, are letting the contracts for the building. Estimates place the value at \$100,000.

HOLLYWOOD, CAL.—Famous Players-Lasky Company have let the contract to the Union Iron Works for a new studio building on the Council Street property of the picture company. The building will follow closely the new enclosed design with steel frame and glass roof and sides. \$20,000 will be expended on the bare structure.

VERNON, CAL.—Fire completely destroyed the packing house of H. F. Lewis Company October 7, with a loss of approximately \$500,000 in buildings, equipment, and stock on hand. The slaughter house, cold storage plant and other buildings covered five acres and had only been completed one and a half years ago. They will be rebuilt.

SAN DIEGO, CAL.—M. C. and R. A. Turner state that a deposit of sulphur has been discovered in Baja California, and connection with the bed will soon be made with the San Diego & Arizona Railroad for transportation of material. A plant will soon be established here for the purpose of using this sulphur in the production of fertilizer.

PASADENA, CAL.—The contract for new quarters for the Young Women's Christian Association amounting to \$130,000 has been awarded to William C. Crowell. Marston and Van Pelt, architects, have provided for every convenience in the way of offices, club rooms, dormitories and recreation facilities, which will make the new quarters one of the best on the coast.

PASADENA, CAL.—A 4-story addition to the Pasadena Hospital providing additional facilities and increasing the power plant and auxiliary equipment of the present hospital, has been started by W. C. Crowell, the contractor. It is understood that complete heating, ventilating and refrigeration installation will be made at this time. The contract amounted to \$150,000, with an additional 25,000 telephone exchange.

LOS ANGELES, CAL.—A bill to provide the city with adequate post office and Federal office quarters has been introduced at Washington. It is proposed to connect the new passenger terminal station to be erected on the Plaza with the new post office by a system of subways which will be used by electric trucks in carrying the mail to and from the depot. This will save time and avoid the street congestion. The appropriation is expected to provide \$3,000,000



Special Lighting for the Tiddley Winks Hound

The illumination of the home should carefully provide for the proper lighting of the chess board, according to an English contemporary. Shadows are often annoying and may account for the loss of a delicately balanced game. It is further recommended by a contributor that special attention be given the illumination of soup plates, deceptive lighting of which may lead the distinguished guest to think he has a remaining spoonful when he has not, thus causing him to forget the point of his story. Waste baskets are another critical point, which in the interests of the investigating baby should be free from conflicting shadows.

* * *

Brain Staggering Statistics

The population of the United States has spent \$44,405,900 during 1921 to date for chewing gum. About one-half the population or 56,999,000 people chewed gum, spending about 78.9 cents per person on the comestible, allowing for treats. 9,452,013 people trod on gum on the sidewalk and 4,327,000 located wads when lifting up their movie seats to let stout ladies pass by. Statistics on profanity are not available.

* * *

Every Port Has a Drydock Now

A recent port convention was reported in a local paper as having been held in the "Northwets." Referring to the climate or the proximity to Canada? Perhaps this is the region where the linotype operator reported a marked increase in the members hip as the result of a membership campaign conducted by one of the prohibition societies.

* * *

What Is the Secret of Success?

Push, said the button.
Keep cool, said the electric fan.
Press on, said the electric iron.
Don't creep, said the meter.
Plug ahead, said the convenience outlet.
Avoid straits, said the curling iron.
Keep things moving, said the generator.
Make good connections, said the electric cord.
Step up when called on, said the transformer.
Make light of your troubles, said the mazda lamp.

* * *

News Bulletins From the Market Reports

Thrown Silks Weak.
Cotton Undertone Slipping.
Hides Unsteady, Trending Downward.

For perfect safety and peace of mind, we recommend the styles prevalent in the Garden of Eden.

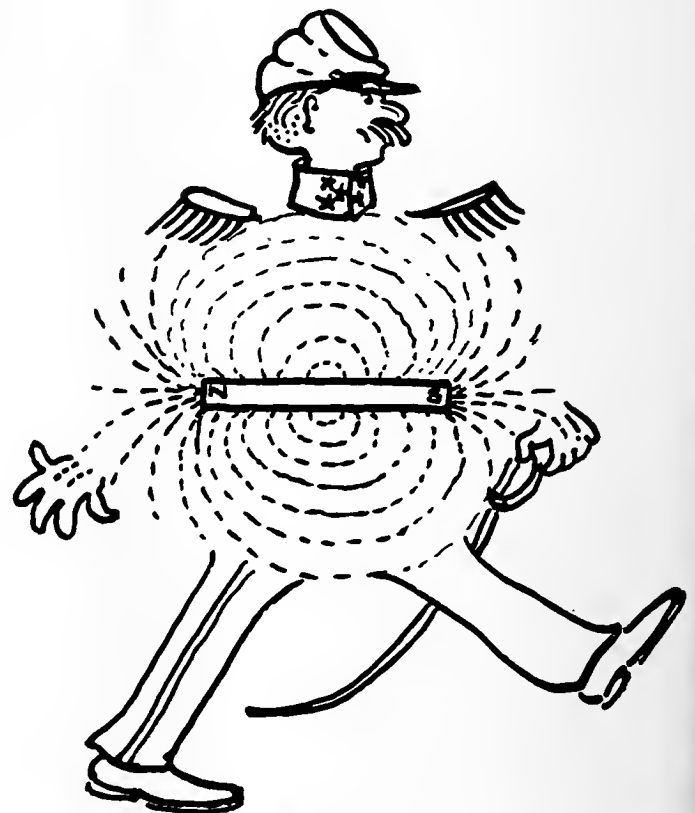
* * *

A long answer turneth away attention.

On the other hand, a short answer sometimes provokes a long silence.

* * *

ELECTRICAL HYBRIDS



XV—The Magnetic Field Marshal

Who is it, attractive,
Seductive and active
To whom all the young blades are partial?
They are drawn to his force
By his strength of resource.
Who's the man? The Magnetic Field Marshal.

His adherents adore him;
They are safe when before him—
He draws all the iron his way.
If you cut through his lines,
He resists your designs
By developing power, they say.

You seldom can see him—
But who would not be him?
When the Powers could not make them yield,
He surrounded the Poles—
Quite repelled them, poor souls—
And now he possesses the field.

Journal of Electricity and Western Industry

25 Cents a Copy

November 15, 1921

San Francisco

The SEPCO "spouts" hot water like a geyser

THE effectiveness, economy and long life of the Sepco heating unit is due to its original tubular design which literally "spouts" hot water.

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Our Mr. Clark is now on the Pacific Coast to demonstrate Sepco and establish agency connections. A critical examination of our product and policies is invited.

His address is, Palace Hotel, San Francisco.



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ELECTRIC
WATER HEATER

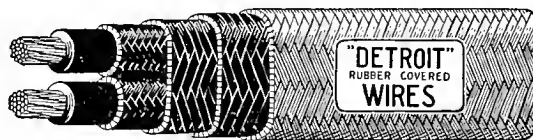
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WIRES

Journal of Electricity and Western Industry

ROBERT SIBLEY, Editor

A McGraw-Hill Publication

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SAN FRANCISCO, NOVEMBER 15, 1921

NUMBER 10

Journal of Electricity and Western Industry

A semi-monthly chronicle of western events, advocating the economy, efficiency and convenience of electric power for all industries of the West—manufacturing, agricultural, mining, merchandising, home building and home making. Interpreting the value of electrical development to the business and financial man, the industrial man, the power man, wholesaler and retailer, contractor and constructor, engineer and home owner.

Because of the abundance of water power in the West susceptible of economical development, a dependable, uninterrupted supply of cheaper electric power is assured for these industries. The basic industry of the West—hydroelectric power generation—for which Journal of Electricity and Western Industry is the spokesman, is therefore logically and inseparably linked to the growth and prosperity of all phases of our daily life and business.

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WHERE THE NEWEST "JOURNAL" SERVICE IS SENT TO YOU WITH THE SPEED OF LIGHT

This view shows the radio transmitting station 6XAC, which is broadcasting the weekly news service of the Journal of Electricity and Western Industry. It is the specially licensed, experimental station of the Colin B. Kennedy Co., located at Los Altos, 40 miles south of San Francisco.

The Journal of Electricity and Western Industry has established and put into successful operation the first industrial news service by radiophone. Every Monday evening at 7:45 this message is sent out to business firms, banking houses, industrials and radio enthusiasts throughout the West, giving the week's summary in industrial and electrical upbuilding of the West. From Mexico to Canada and as far east as Omaha this splendid new service is now available. It means a greater West and a West that is one happy, unified family grouping.

Dr. Leonard F. Fuller of the Kennedy Company, who is shown in the insert, gave special attention to the design of the antennae and the arrangement of the apparatus in general at 6XAC, in order to make it a model of high efficiency. The result, in terms of long range for low power output, is believed to be the best yet recorded. Dr. Fuller, who is well known in the field of radio telephony, has contributed some of the most important scientific advances in its development.

Both in this radio news service itself, which is the first time radio has been regularly employed in just this way; and in the use of radio equipment of such high efficiency—a western product of western men—there are new evidences of the way in which the Pacific Coast is continuing its progress and leadership in the electrical field.

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ROBERT SIBLEY, EDITOR

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Norman S. Gallison

Clotilde Grunsky

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CLEAR THINKING THE DEMAND OF THE HOUR

CLEAR thinking based upon absolute fact is the one means whereby our great West may make progress in the development of its natural resources that will endure. So far as the power situation is concerned in the West, the answer is within easy reach. Place the privately owned and municipally owned enterprises under the same state-wide regulatory laws subject to the same burden of taxation, requiring the same method of keeping accounts. A movement is now being initiated by the agricultural and industrial associations of the interior valleys of California to place initiative measures upon the 1922 ballot to accomplish this result. It is a splendid idea. Under such comparative operation and maintenance of service, the public will be enabled to draw its own conclusions in a complete and impartial manner. Only under such a method of comparison, is clear thinking a possibility.

The Fallacy of Restricted Territory

THAT competition is no longer advisable as a basis for business in the conduct of public utility enterprises is coming to be a recognized principle. The duplication of physical equipment and of capital in the case of competing power companies or telephone systems means an economic waste which must be reflected in higher rates and less satisfactory service to the public. In return for exclusive privileges and restricted territory, these monopolies submit to government regulation in all departments of their functioning.

The same principle cannot be applied to the strictly private manufacturing or merchandising corporation. The essential principle of our business system is that competition shall be maintained—as is testified to by the fact that there are various anti-trust laws already on our statute books. Of recent years in the West, we have made much of cooperation and have been pleased to announce it as a new principle which supplants competition. Our position, however, requires clearer definition. Cooperation must indeed take the place of cut-throat methods and secret enmities, but if any industry is to maintain its vitality, the primary principle of free competition must be maintained.

Cooperation is the great step forward which the past business decade can claim. It means the

recognition of the fundamental principle that no man stands by himself, but that individual progress is bound up with the forward movement of the whole. In the electrical industry of the West, it has meant inter-industry good feeling, better methods of doing business throughout, higher standards of service to the public and a resulting confidence on the part of customers in the good faith of the industry.

We have a right to demand that outside interests coming into this territory live up to the high ideals which have been set and that they do not take advantage of carefully built up good-will to foist poor materials or poor service upon a trusting public. But we should not expect any cooperative movement to bring us monetary returns through any exclusive rights it may give us to markets. If to support a cooperative educational campaign means in the end that the public must pay more for what it gets, then the public will inevitably buy elsewhere and the campaign will be doomed to failure. What it should mean is that the public becomes so sold to the idea of electricity and so surrounded on every hand by good service and far-sighted merchandising appeals that the increased sales will repay any expense incurred by the industry. Cooperation in its broadest sense is conceived primarily in the interest of the public, and in its above board application along these lines, carries with it its own reward of success.

The American Plan in the Builder's Trades

NATION wide attention has been attracted to the institution of the so-called "American Plan" in the Builder's Trades of the San Francisco Bay region. Under this plan of operation, four outstanding basic principles are given recognition: First, the laborer is recognized as having the right to seek employment irrespective of whether or not he may belong to a union; second, the employer reserves the right of freedom of contract under which he may employ whomsoever he sees fit to employ, employing union men, part union men, or union men solely at his option. Third, the laborer in each craft is guaranteed a minimum wage fixed by arbitration after due investigation has been made as to cost of living and other factors that enter into a determination of this nature. And, fourth, both employer and employee will at all times be under the surveillance of an industrial relations organization which will see to it that fair play and honest dealing are maintained between employer and employee and will safeguard public interest at all times.

It is evident that only in so far as fair play and confidence are maintained in the minds of the employer, the employee and the public at large, will there ever be industrial peace. Hence, it may well be said that upon local activities of such an industrial relations association in the plant involved and in the community served, depends the success or failure of the American Plan. And this means that only in so far as the moral conscience is awakened in both employer and employee to give fair, efficient and adequate service to the public, can the plan be called successful.

That association which is destined to break the back of labor by crushing its power to organize, is doomed to failure from the start. Cooperative organization is the keynote of progress of this day and age, and it should be recognized that by encouraging helpful, clean, honest, efficient, productive organized effort among the laborers, the highest type of social and economic development is brought to life.

Where the Model Home Fails to Tie-in with the Electrical Idea

INTEREST in the home electrical is now practically universal throughout the West. From Astoria, Oregon, to Denver, Colorado, and in various cities of California the movement has received widespread attention not only in the electrical industry itself, but also among architects and builders and particularly among the buying public. Los Angeles, due to its tremendous building program now averaging about \$8,000,000 a month, has perhaps attracted more attention nationally than any other city of the West in the matter of home building, and in the Home Electrical Los Angeles has put forth the most complete exhibit in this regard that has thus far been accomplished.

It is, however, surprising to find that even under

such favorable situations, the home builder fails to capitalize the commercial value of the electrical idea in the home. Witness for instance, the modernized adobe homes that are being put out by Victor Girard in the Walnut Park addition of Los Angeles. Here you will find the modernized adobe home, beautiful, artistic and complete, yet the inspection of one of these model homes reveals the surprising fact that in the dining room may be found the upturned globe reflector type of center illuminating unit with no baseboard receptacle installed wherewith to attach the electric toaster displayed on the table. In the kitchen may be seen the electric range, and the electric dish washer is found near by, but diligent search fails to reveal any place where the electric washer may be attached, and search as you may throughout the many rooms of this wonderful and beautiful home, you can find no electric convenience outlets to lighten the labor of the housewife. This instance is given in detail because it represents one of the most powerful firms engaged in home building in the West, with whom is associated the Hammond Lumber Company, one of the outstanding lumber companies of the West. When it is thus seen to what extent one of the most remarkable home selling arguments in recent times is overlooked by those most interested, there is little wonder that the advantages of the modern home electrical and the installation of increasing numbers of electrical convenience outlets in the new homes of the West have failed to reach the public generally with their captivating appeal.

The Public Safeguard of Customer Ownership

EVERYONE is willing to concede the value to the power company of large blocks of stock distributed in small holdings among their customers. But little has been said, on the other hand, of the safeguard which this offers to the continued operation of these companies in the interests of public service. Should these organizations ever fall into the hands of unscrupulous operators or flagrantly fail in their service to the community, the actual voting power back of the stock thus owned would be sufficient to exert the deciding influence in improving the management.

In this connection the well attended meetings of stockholders which have been held during recent weeks by the Pacific Gas and Electric Company in various districts of California are significant in that they illustrate the possibility of bringing the scattered units into organized groups. English shareholders, as a rule, attend their annual meetings, filling very large halls, but the American stockholder is ordinarily content to send his proxy. In encouraging the closer familiarity of stockholders with the plans and financial affairs of the company, the power companies are laying up for themselves a future surveillance of their actions which makes actual the claim of public ownership through customer ownership. That they are willing to meet this test, augurs well for the sincerity of their pledge of public service.

How Much Does It Cost?

THE woman customer has at last stepped forward to state just what information it is she desires on the subject of electrical appliances. Several recent interviews and conversations with society and home women who were speaking for their sex have emphasized the woman's viewpoint as a customer. Women have been sold the electrical idea, according to these spokesmen, what they want to know now is—how much does it cost? Does the appliance in the first place come within the range of their pocket books? How much will it cost to operate it after they get it?

It is surprising how little accurate information on this latter subject is at hand. A group of prominent electrical men gathered together the other day were unable to unite on any one figure as to how much it costs to operate an electric water heater and whether this can in any way be compared to gas heating. How many contractor-dealers can answer the customer who asks what her electric bill will amount to if she installs an electric range or an electric washing machine? A mere approximation of costs is of little satisfaction. What she wants to know is what the cost per hour of operation, per gallon of water or per any other handy unit will amount to at the rates which the power company in her town is charging.

For small appliances, where the rating is on the name plate, it becomes only necessary to be familiar with the rates of your own community to be able to calculate costs exactly. How many have figured it out? For such equipment as electric ranges and water heaters, the dealer should know about what bills average for households of a given number. It might even be valuable to have equivalents in terms of the former gas bill—that is, a family which formerly used \$3.00 for gas cooking will use about so much in electricity, etc. The local power companies are or should be in a position to furnish this information. The California Electrical Cooperative Campaign has undertaken an investigation of the subject and it is hoped that accurate figures will soon be available in convenient form.

The Raisin Industry Establishes an Astonishing Record

SOME ONE conceived the idea the early part of this year of shipping seedless raisins in little five-cent cartons, in size perhaps representing about four times the volume of a five-cent package of chewing gum. From September 15th to October 15th 360,000,000 of these cartons were sold throughout the United States, totaling a sales outlay of \$18,000,000. It is a wonderful thing what enterprise in the West with its enthusiasm and daring is accomplishing. Here is an industry young in vigor and with tremendous possibilities for the future. Some one has said that raisins are great things to introduce iron into the system of the human being. As a consequence "Had my iron today" is becoming a slogan

wherever the little five-cent carton of raisins is known, and it is said that even Vice-President Coolidge during October partook of his iron at the twelve o'clock hour, furnished to him by the Secretary of Agriculture in the nature of one of the little five-cent carton of raisins. This instance of a marketing situation running into the millions, yes, hundreds of millions, emphatically sets forth what enthusiasm, vigor and daring can accomplish in the West.

Arizona To The Front

ARIZONA has during the past decade not only established a national record as the state which has increased in percentage of population more than any other in the union, but in industrial matters as well, Arizona is ranked as a national and international figure. Particularly may this be said in the mining and smelting of copper, where economic processes have been introduced and the yield of copper increased to figures that in some respects have startled the mining world. Now, however, that these economic developments have taken place, Arizona has in recent months found itself faced with a serious situation, namely, the over production of copper in the markets of the world. A movement has been started by leading citizens in the state of Arizona with the slogan, "Use Something Made of Copper" and results have been obtained that are being felt in helping to readjust this depressing situation. New buildings are being put up in some instances with roofs of copper. Indeed copper is being made to enter into the furnishing of homes and the building of industries to a degree that was not otherwise thought possible, or economic. Here is a suggestion that might well be extended to other states of the West, to help Arizona put this slogan over. There are many small ways by which this slogan may be forwarded, and it is hoped that the sister states in the West will take kindly to this proposal and show what truly cooperative and sympathetic action can bring about.

In the Interest of Western Development

THE broad plan of activities and the membership drive recently instituted by the California Development Association place this body in a position to render that service to the industries and agriculture of the state, which a progressive Chamber of Commerce may accomplish for its city. This action is in line with the awakened interest in forwarding industrial development shown through the industrial expositions which have been so successfully carried out in the various cities of the West. The state-wide scope of promotional effort to bring about the co-ordinated utilization of new capital and man power in the best interests of the state as a whole, marks the first step toward a coast-wide movement which must be the ultimate aim of the West. There is need for some such regional organization which shall mean in research work for the industrial field what the N. E. L. A. has meant to the electrical industry.

Western Comment on Current Events

Editorial Notes and Readers' Views on the Outstanding Aspects of Financing, Trade Promotion, Legislative and Associated Topics that have a Special Bearing on Western Business

City Projects Under Rail Commission Initiative Measures Proposed to Bring California Municipal Projects Under State Taxation and Railroad Commission Regulation

A campaign has recently been initiated by representatives of the various commercial bodies throughout the San Joaquin Valley to place two initiative measures upon the 1922 ballot, aimed primarily toward the equalizing of the burden of taxation between rural and municipal districts.

The proposed initiative relative to making publicly owned utilities subject to the same taxes as privately owned utilities will amend the state constitution by adding a new section to Article XIII to be numbered Section 15, as follows:

"All property, works, plant and equipment owned, operated, managed or controlled by any city, city and county, county, district, or other public agency, created and existing under and by virtue of the constitution and laws of this state, and held or used for supplying the public with light, power, heat, transportation or telegraph or telephone service, shall be assessed and taxed in the same manner, to the same extent, and for the same purposes, as like property held or used for like purposes by private corporations and natural persons shall be assessed and taxed under authority of this constitution and laws enacted pursuant thereto."

The second initiative, which would place all municipalities under control of the State Railroad Commission, amends the state constitution by adding a new section to Article XII to be numbered Section 34b, as follows:

"Every city, city and county, county, district, and other public agency, created and existing under and by virtue of the constitution and laws of this state, which shall at any time own, operate, manage or control any property, works, plant or equipment for supplying light, power, heat, transportation or telegraph or telephone service, either directly or indirectly, to or for the public, shall henceforth, in respect to such property, works, plant and equipment, and the business conducted by means thereof, be a public utility, and be supervised and regulated by the Railroad Commission of the State of California in the same manner and to the same extent in all respects, except the issuance of securities, as private corporations and natural persons owning, operating, managing or controlling like property, works, plant or equipment for like purposes."

In commenting upon the action taken by the San Joaquin Secretaries Association, the Fresno Republican says:

"These two measures are essential to an adjustment of the balance between various parts of the state in relation to their bearing of state burdens and their enjoyment of the results of state regulations of utilities.

"We should permit public ownership to win on its own merits. If public ownership is best for the people of a community or of a state as a whole, let's have it. But don't tax people's light bills, if they get San Joaquin Light and Power company light, and exempt them if they get Pasadena city light."

The proposed action is in line with the stand consistently taken by the Journal of Electricity and Western Industry that private and municipally owned plants should be placed upon an equal footing.

Public Work Plan For Western States Reclamation Projects Totaling an Expenditure of \$16,000,000 Proposed as Immediate Aid to Unemployment Situation

An appropriation by Congress in the form of a loan to the Reclamation Fund of \$16,200,000, for expenditure on projects now under way was recommended by the President's Conference on Unemployment during their recent sessions in Washington. This would be utilized in immediate construction this winter, thus providing direct employment for 16,000 workers, as well as indirectly stimulating construction material industries. The projects on which this money would be spent are as follows:

State	Project	Amount
Colorado.....	Grand Valley	\$1,200,000
Idaho.....	Boise	1,200,000
	Minidoka	2,000,000
Montana.....	Sun River	800,000
Nebraska-Wyoming.....	North Platte	2,000,000
Nevada.....	Newlands	1,000,000
New Mexico-Texas.....	Rio Grande	1,400,000
Oregon-California.....	Klamath	1,000,000
Washington.....	Yakima	3,600,000
Wyoming.....	Riverton	1,250,000
	Shoshone	750,000
		\$16,200,000

The Reclamation Service suggests further that work could be started immediately on the following new projects already investigated by their engineers.

State	Project	Immediate Expenditure	Additional to Complete
Arizona	Boulder Canyon dam.....	\$ 5,000,000	\$50,000,000
California	All-American Canal and laterals	15,000,000	20,000,000
Arizona	Parker	4,000,000	10,000,000
	San Carlos	4,000,000	10,000,000
		\$28,000,000	\$90,000,000

This work would furnish employment for five months to between 25,000 and 30,000 men on the work itself, and indirectly to between 10,000 and 15,000 more.

Without commenting on the advisability of rushing work on such projects as are yet in the controversial stage, it may be said that Reclamation Service work is especially adapted for the stabilization of employment conditions. The employment of all grades of labor meets the needs of the unskilled as well as skilled worker and western climatic conditions permit of the work being carried on without interruption over the winter period. Furthermore, this outlay is in the nature of an investment and will eventually be repaid to the government by the settlers on these projects when completed.

Boston Terminal for Western Lumber

Delegation of Lumber Men From the Northwest to Investigate Possibilities of Steamship Line with Massachusetts Terminal

The West Coast Lumbermen's Association, according to Robert B. Allen, secretary-manager, White Building, Seattle, will before the first of the year send a delegation to Boston to confer with Massachusetts state authorities regarding the proposed East Boston lumber terminal project, which was proposed at the International Port Convention of the American Association of Port Authorities in Seattle recently. Massachusetts' proposed plan for a mammoth lumber terminal in Boston, connected with Seattle and other Northwest lumber ports by fleets of steamships operating through the Panama Canal, has impressed local lumbermen as a means of stabilizing the Northwest lumber industry. Massachusetts is reclaiming 1,500 acres in East Boston, 160 acres already being ready, as a site for the first unit of the proposed lumber terminal. This terminal will become the great lumber distributing depot for all the New England states.

Interurban Situation in Los Angeles

Abandonment of Non-Paying Lines May Improve Other Service and Avoid Receivership on Pacific Electric Lines

As a second chapter in the petition for increased rates which the Pacific Electric Railway filed last year, the State Railroad Commission recently reopened hearings in Los Angeles.

Pending the valuation determination by the engineers of the commission, the railway has operated under a temporary increase in rates. It is supposed that permanent rates will be no higher than those now in force, but many adjustments of schedules, transfers, and even abandonment of non-paying lines are being suggested by the engineers as possible factors in the elimination of the present operation at a loss. During the hearing it developed that the company is now receiving less than 1.50 cents per mile for passengers carried.

The possible regulation of motor-bus transportation where it parallels traction lines and the present differences in valuation figures between the engineers of the commission and the company will be important subjects to be disposed of at the next hearing scheduled for November 15th.

The last census figures indicate that automobiles carry a large per cent of the traveling public on the daily journeys of business and pleasure. Western states average fewer than eight persons to each automobile. One-third of the total number of people that pass through an ordinary city block, do so in automobiles.

In return for the convenience and the time saved, a much higher charge for transportation is willingly paid. But now, when one has to park at great distances from business districts and walk, or pay another few cents per mile for the privilege of

leaving the car on a vacant lot, neither convenience nor time saving looms as an important factor.

For several years the city lines of traction companies have been trying in vain to meet the lost business with some antidote of lower operating expenses in one manner or another, but in nearly every instance the struggle has been a losing one. Now comes the same difficulty in interurban service. Good roads, and \$1,000 autos that will run 100,000 miles before being scrapped, are forcing the interurban companies to seek higher rates from regulatory bodies and in cases, where relief is not granted, to curtail service. In either case, that portion of the public which must deny itself the freedom and expense of auto transportation is at once the innocent bystander and pays the usual penalty of suffering.

If we are still to claim fairness to all, such problems as now face the transportation companies of the state of California because of the accumulation of large deficits, should be promptly disposed of and non-paying lines should be discontinued so that revenues on paying lines may be used to good account in maintaining service. The users of the service should be the ones to choose between higher rates and suspension of the service on the poorly patronized lines.

Packers Would Re-enter General Field

Western Business Interests Take Steps to Oppose Proposed Revision of Packers' Consent Decree at Washington

Several of the western Chambers of Commerce have passed resolutions opposing any modification of the so-called "packers' consent decree" by which the big meat packers of the country recently were ordered to withdraw from all unrelated lines of industry such as the canning and sale of fruits and vegetables.

The meat packers were charged with violating the Sherman anti-trust law, and they consented to the decree entered against them before the case had arrived at the trial stage. Effort is now being made to bring about a modification of this decree.

The position taken by western business is that it would seriously injure the producing, canning and marketing interests of this district to permit the meat packers again to engage in the business of canning and marketing fruits, vegetables and other food commodities, thereby placing the sale and distribution of western food products at the mercy of a buying monopoly. One of the objections against the packers lies in the discriminatory freight rates made possible to them through the use of their heat refrigerating cars for other shipments as well. It is felt that the existence of such a monopoly would tend to bring about government regulation of this industry which would in turn mean the beginning of government supervision and regulation of all large industrial enterprises.

A public hearing will be held upon the modification petition at Washington, November 25th, and it is expected that several western organizations will be represented.

Letters to the Editor

Inquiry Concerning Gas Wastage in California Is Answered by an Authority

To the Editor:

Sir: Will somebody please explain why natural gas is wasted in the shadow of a new artificial gas plant?

Just because a gas gusher caught on fire near Long Beach the other day it drew the attention of hundreds of people. Little or no comment is heard, however, when the roar of wasting gas can be heard for miles, if it does not take fire. New wells in the fields adjacent to Los Angeles are frequently permitted to blow millions of cubic feet of gas into the atmosphere just because they started out for oil and are not equipped to recover anything else.

In the meantime millions of dollars are being spent to provide the growing communities with more artificial gas. This is not conserving the natural resources of the great West nor the money of its people.

C. K. CHAPMAN.

Los Angeles.

To the Editor:

Sir: Apparently the inquiry quoted in your letter comes from the recently developed oil and gas well at Montebello where gas and oil were struck in large quantities by one of the smaller oil companies of the state.

Where oil and gas are found in the same formation, it is impossible to produce the oil without producing the gas at the same time, and practically all of the gas produced in Southern California comes from oil wells. The only wells producing gas and no oil in California are in Kern county.

Oil and gas produced from oil wells is passed through a trap, the gas separated, and if of sufficient pressure to transport the gas through pipelines to market, it is possible to prevent waste provided such wells are within a reasonable distance of transmission lines. If, however, the natural pressure is so low (which is the case in the majority of wells), it is then necessary to install compressor stations which require, on account of the large machinery necessary, several months to install before the gas in any great volume can be put to commercial uses.

Again, it is true that practically all wells producing both oil and gas produce much more oil if a low pressure is carried on the top of the well, and this pressure, if carried low, makes it again impossible to transport the gas to market without the use of compressors.

The ordinary oil man wants to have his oil well produce all the oil possible, and he is able to store the oil as it is produced and keep it from wasting. Therefore, it is very hard to have him understand that in order for a gas company to take all the gas coming from a well, even though the pressure is sufficient to transport it, it is necessary to have gas consumers which can absorb this fuel at the exact time it is produced, not matter how the volume of gas varies. In other words, it is necessary to have a market every minute for all the gas which he chooses to allow to escape from the well, which is a condition that very seldom exists, as consumers' requirements vary, depending upon the weather and upon the starting and shutting down of industrial plants, which increase and decrease their fuel requirements day by day and the majority at night shut down entirely.

All that I have said refers to wells producing both oil

and gas, and not to the dry wells in Kern county, the output of which can be curtailed to take care of the varying market conditions.

In Kern county at the present time, through cooperation of the oil companies and the Midway Gas Company, practically all waste has been eliminated, and the large volume of gas produced by the big Tupman oil wells is being compressed and marketed.

In Southern California a few million feet of gas is being wasted in Orange county, but compressor stations are being built at the present time and shortly this waste will be reduced to a minimum.

Referring now more directly to the well which as stated above caused the inquiry, I think shortly the pressure on this well will be raised by curtailing the flow of the oil, and this increased pressure will make it possible to market the gas.

Both the Mining Bureau of the state and the Railroad Commission are much interested in developments of this character, and I am informed that they have representatives studying the conditions of waste gas continuously with an idea of stopping such waste at the earliest possible moment.

In order that you may have an idea of the efforts the gas companies and oil companies are making to prevent waste, up near McKittrick we recently spent several thousand dollars to connect up a well which was four miles away from our lines which after being connected only lasted three days, and it was necessary to take up the pipe.

At Hawthorne, south of Los Angeles, three wells have been drilled into what was apparently a gas sand, but this sand carried so much water that the wells never lasted more than a day or so before dissipating themselves. We were so impressed with these blowouts that in laying lines down in this district we laid them large enough to take care of this supply which has not materialized.

Recently the Southern Counties Gas Company laid a line to Huntington Beach oilfield because it looked as if Huntington Beach would produce a lot of gas in connection with the oil development in that district. However, up to date, the gas production has been very small and all used in drilling operations, so that there has been none available for the new line.

I have gone into this question rather fully for although it is impossible, even in a long letter like this, to tell you of all the problems which we have to handle in trying to prevent gas wasting, the more I can tell you the better you would be informed to answer inquiries of this character.

A. B. MACBETH,

Vice-President and General Manager.
Southern California Gas Company.

Forecasts Tremendous Industrial Development Due to Water Power and Irrigation

To the Editor:

Sir: I appreciate very much your thoughtfulness in sending me copy of the map which was gotten out in the interests of advertising the West. It certainly is well done. When one realizes how much we have to advertise, there can be no doubt but that we will get results if we all pull together.

Each of us looks at the business world largely through his own business. I believe firmly, that even those of us who are close to this development work do not realize the momentum the movement towards the West has gained. The possibilities of Southern California alone, due to cheap power and cheap water combined with good working conditions and large agricultural areas to supply food and raw materials, are so great that it makes it almost impossible to forecast our future development.

To date our income has come from citrus crops, garden truck, oil and tourists. Industrial development has been very slow indeed. I firmly believe that this is going to change, thanks to water power and water for irrigation. The greatest danger to our state development is the promoter who exaggerates and starts enterprises which, owing to over-capitalization or improper management, fail. What we need is clear thinking men who will build solidly as they go, and avoid the pitfalls of over-capitalization and over-extension.

DAVID T. BABCOCK.

Blyth, Witter and Co.
Los Angeles.

Proper Functioning of the Industrial Machine Depends on Cooperation of Labor

To the Editor:

Sir: I have been for some thirty years in the S. O. S. of the Engineering Army with San Francisco as my base of operations, and have "followed the engineer almost around the world." As a consequence of which experience I have been able to get a somewhat more extended view of general problems of development than would have been possible had I confined my operations to the Pacific Coast field alone.

This work has brought me in contact with many men of the broadest vision and with projects whose magnitude is not even yet comprehended by some of our Eastern and Middle Western friends; and apart entirely from the question of profit to myself, I consider that I am fortunate in being in a position to contribute to some extent toward the development of our wonderful state, by supplying some of the necessary materials.

Among the greatest factors in the development of our state I should count the Cooperative Campaign now being conducted by the several branches of the electrical industry, in which our own Electrical Development League is taking so prominent a part, and if in addition to interesting the general public in this campaign, we also set a high standard for ourselves and firmly resolve that we will have nothing to do with putting on the market anything but the very highest grade of equipment we shall have no need to apologize to anyone, as the results will speak for themselves.

One very important work that must be undertaken by all employers is the inculcation of a like spirit of cooperation among the laboring classes, so-called, as, until labor realizes that it is an essential part, but not by any means the whole, of industry, also that the other parts of the industrial machine cannot function properly if there is friction, we cannot progress as we should, and consequently labor must suffer with the rest of us.

May I offer you my hearty congratulations on the splendid work the "Journal" is doing all along the line, and assure you of my desire to cooperate to the fullest extent possible.

THEO F. DREDGE.

San Francisco.

The Journal of Electricity and Western Industry is sending out each week by radio-telephone a report on the outstanding engineering and industrial developments in the eleven western states, together with a concise review of business conditions in the principal cities in this district. In each issue hereafter the outstanding items of this valuable news and business service will be published in a special section. The adjoining excerpts are taken from the first two messages.

Radio Bulletins

Stephen Q. Hayes, special electrical engineer for the Westinghouse Electrical and Manufacturing Company, has just returned from the Orient, and reports that the demand for electric power is seemingly ever increasing, with no attempt as yet to create a market for electric appliances. He states that the Orient constitutes one of the greatest future markets for American electrical goods.

The furniture industry of Los Angeles is turning out products valued at \$19,000,000 annually, according to a survey made by the Chamber of Commerce of that city. A total of \$10,000,000 is invested while the weekly payroll is \$115,000.

California will spend approximately \$7,000,000 on public works beginning January first. The State Board of Control will oversee the spending of six millions while the Board of Harbor Commissioners will spend an additional million for the improvement of San Francisco bay. A total of \$3,000,000 will be spent for an annex to the state capitol at Sacramento.

Utah has produced approximately three million tons of coal during the nine months ending September 30, having reached a point where it is regarded as one of the leading coal producing states of the Union.

The Southern Pacific Company has announced that it will reduce freight rates on grain, grain products and hay between points in California, Oregon, Nevada, Arizona and New Mexico and between western points and cities as far east as the Mississippi River. The reduction will be particularly beneficial to the farmers.

The San Francisco Industrial Association has announced drastic cuts in the prices of nearly all building materials for San Francisco. Construction work is immediately expected to speed up.

China will have a powerful radio station according to Barnes Moss of the Federal Telegraph Company, who has announced that his company will build a station at Shanghai for the Chinese government.

The following is a review of business conditions in the principal coast cities for the past week:

San Francisco: Wholesale and retail trade improved, sales heavy and collections good.

Los Angeles: A new building record was set during September when building permits valued at \$8,300,000 were issued. Retail trade is quiet, wholesale trade fair and collections good.

Salt Lake City: Credit situation improved with loans quoted at 7½ per cent for the first time in a year and a half. Wholesale and retail trade is good with collections excellent.

Denver: Warm weather has tended to decrease the fall sale of coal and clothing. Other lines are fairly active. Collections are good while building is increasing.

Spokane: The lumber market is the best that it has been this year. Record crops of wheat and apples, all sold, have brought an abundance of money, which is being spent freely. All together conditions are the best they have been since the so-called depression.

Seattle: A small salmon pack has considerably increased the prices. Fall buying is being reflected in the wholesale and retail trade. Collections are good.

Portland: Lumber, wheat and apples are being shipped to the Orient and Europe in enormous volumes. A cold spell has made itself felt on the trade. Collections are excellent.

Builders of the West

MOST "native" westerners who grew up in the electrical industry and helped to win its triumphs seem to have been born on the Atlantic seaboard and destined for the profession of president or newsboy by ambitious parents, whose plans were frustrated only by the firm character of their sons who, determining upon a life of adventure and electricity in the Wild West, tore themselves from their home surroundings at more or less early stages of their careers. It is refreshing, therefore, to come upon a recognized leader of western business who acknowledges San Francisco as his birthplace and the electrical field as his first and constant ambition.

If there is a pioneer of the electrical industry in the West, it is Tracy E. Bibbins, now president of the Pacific States Electric Company. He started in 1889 by helping to construct the first electric railway of Oregon, the Portland Albina Street road. Portland at that time, when many of the older communities of the country were still back in the dark ages of flickering gas lamps and horse cars, already had electric service and was building for the future. Young Bibbins was casting his lot with progress. A short time thereafter, he was transferred to the position of storekeeper with the construction company, thus following out an early tendency to the jobbing function of stock maintenance. Later he entered the employ of the Edison Electric Manufacturing Company, which at that time was in the process of transmutation, and shortly became the Edison General Electric Company and later the General Electric Company as now known.

It is difficult to realize the state of the electrical industry in those early days. Electrical retail establishments were unknown and the electrical jobber had not yet arisen to perform his function of shock absorber between producer and consumer. The manufacturer and the central station went hand in hand—or sometimes not in such friendly fashion—as the pioneers of the field, building slowly from chaos the well developed cooperative organism which now



TRACY E. BIBBINS

Who from his first job on the original electric railway built in Oregon to his present position as president of the Pacific States Electric Company, has been working for the upbuilding of electricity in the West.

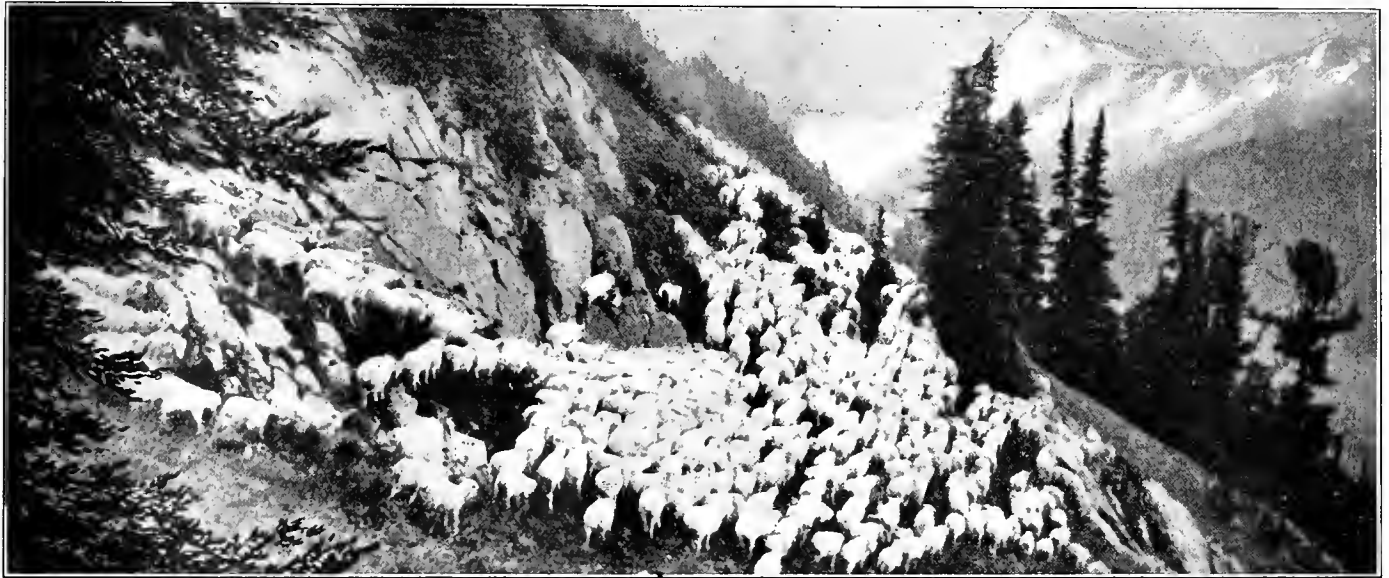
functions in the merchandising of current-consuming devices. In the working out of the jobber's province and all the angles associated with it in electrical merchandising, Mr. Bibbins had an important part. He had been transferred to the San Francisco office of the General Electric Company in 1895 in the position of clerk and now rose through supply manager to local manager, which position he attained in 1912.

The Pacific States Electric Company was formed in 1909, as a merger of three existing jobber concerns. It was one of the early coast-wide jobbing houses and helped in the formulating of pioneer policies and in the establishing of the lines of service. Although he was instrumental in the formation and in the development of the company, Mr. Bibbins did not join its ranks until 1916, when he became its president.

Mr. Bibbins, through his connection with electrical merchandising in its various fields, has been prominent in jobber activities on this coast ever since there were such things. He has followed the industry through its early struggles of doubtful credits and lack of cooperation between competitors and has had an important share in bringing about the satisfactory conditions which exist today. He was one of the leaders of thought in formulating the idea of inter-industry cooperation which was back of the California Electrical Cooperative Campaign and with the support of his associates, has been one of the staunch upholders of the cooperative idea in all its applications.

Believing in the principle that the individual business profits most when the entire industry advances, Mr. Bibbins has been prominent in all electrical organization of this region. In 1919 he served as chairman of the Pacific Division of the Supply Jobbers' Association and later on the executive board.

To Tracy E. Bibbins, then, because of his pioneer vision of electrical possibilities and his consistent contribution toward the upbuilding of the industry in the West, this issue of Journal of Electricity and Western Industry is affectionately dedicated.



The great bands of sheep on the ranges west of the Rocky Mountains produce over two-thirds of the wool in the United States.

Western Products Overcome Difficulties in National Markets

Handicaps of High Freight Rates and Prejudice of Public which Favors Eastern-made Goods May Be Overcome by Low Costs, Aggressive Selling and by Manufacturing a Superior Product

By A. R. JACOBS

President, Oregon City Woolen Mills

SINCE Marcus Whitman saved Oregon to the Union in 1843, countless millions of sheep from the great ranges of the West have contributed their fleeces to provide clothing, first for the pioneer, and now for all America. On the spot where Sacajawea led Lewis and Clark to gaze in wonder on the Willamette Falls, the Oregon City Woolen Mills founded an industry in 1884. Here they found natural power to operate the mill, and pure soft mountain water to wash the "fleece as white as snow." Today, on this site, stands a large modern mill, where the sons of the founders are weaving the virgin wool from the sheep on the ranges of Oregon, Washington, Idaho and California, into a great variety of overcoats, mackinaws, robes, shirts and blankets.

The Handicaps Faced

In overcoming the handicap of distance and high freight rates, in winning the approval of a discriminating public prejudiced in favor of eastern products, by placing a western product on eastern markets, it is essential that a manufacturer have low manufacturing costs, a superior product, and that he pursue an aggressive sales and advertising campaign. Oregon City Woolens, "Woven Where the Wool is Grown" are today known from Oregon to Maine, and are an example of the reward of patient and unremitting toil.

The establishment is one of the largest in the United States where every step in the process of making and tailoring woolens is taken under one roof. The wool fleece is brought to the mills as it comes from the clippers' shears. Here it is sorted, graded, cleaned, dyed, carded, spun, woven, tailored,

packed and made ready to be shipped in the shape of finished articles. This, together with local labor and low power costs, has reduced the expense of manufacture to a minimum.

Oregon City Woolens are a superior product. Skill in weaving is a heritage that has come from three generations of experience. The manufacturers have the first choice of wool in the heart of the great wool country. Oregon's moist climate, its pure, soft mountain water, are natural assets to the weaving of fine woolens.

The Solution Devised

An aggressive sales campaign has been successfully won by sending salesmen to every state in the Union, and by assisting the retailer to tie his local advertising in with a series of advertisements in national magazines. The company has for two years concentrated its national advertising in the Saturday Evening Post, and has contracted for 12 full-page advertisements on the inside back cover of this magazine for the coming year. This medium was chosen because of its wide distribution. So effective have been the merchandising methods that it has been necessary to maintain sales offices in New York, Chicago, Boston, Kansas City, Minneapolis, Denver, Salt Lake City, San Francisco, Seattle and Portland.

The plant of the Oregon City Woolen Mills is situated in Oregon City, eleven miles south of Portland, which is the center of distribution for wool raised in Oregon, Washington and Idaho, and the second largest wool depot in the United States. It is one of the largest industrial plants in the Northwest, ranking next to the paper mills in Oregon City.

Water is diverted from the Willamette river above the falls for manufacturing processes and for power purposes under a perpetual water right.

Manufacturing Process Described

The two million pounds of wool used annually pass through the scouring mill where the dirt and grease are removed. The dirt and grease content runs all the way from 45 to 79 per cent of the weight of the wool. After scouring, the wool is dyed into the many and varied colors desired for the different products. The various colors are stored in separate bins in the mixing department from which they are taken and mixed in proper proportions and sent to the carding machines. The carding department contains a number of delicate machines which "card" out the fiber and wind onto spools a thread without any twist and of practically no strength. These spools pass on into the spinning room where the yarn is spun or twisted into thread, ready for weaving.

Before weaving, however, yarn is wound onto immense spools at the same time mixing the threads of various colors in the proper proportion which partially determines the pattern of the finished goods. These large spools are placed on the ends of the looms and the yarn on them constitutes the "warp" or lengthwise threads in the goods. Through these the shuttles of the loom containing colored yarn, pass the "weave" or crosswise threads of the goods. After being shrunk, washed, dried and either napped or sheared, the goods pass to the cutting and manufacturing department.

The mill has a most efficient organization of 600 employes who are well paid and work in light, clean factory workrooms where conditions are as nearly ideal as possible in a factory of this kind. A bonus for continued service is given to all employes after they have been employed for six months. This bonus runs from 2½ per cent to 15 per cent, reaching the maximum amount after the employe has worked continuously for five years, due allowance being made for necessary absence, etc. The Oregon City Woolen Mills was the first plant in the West and one of the first in the country to go to the 48-hour week. Many of the employes of the mill have been in the service of the company for as long as twenty-five years and it is not unusual for generation after generation to make their start in their life's work in the mill. There is a very close and

friendly relation existing between the employes and the management. Each year the management gives the employes a Christmas jollification and a midsummer picnic. This has done much to cement the friend-



View of the giant looms in the well lighted factory of the Oregon City Woolen Mills. Here the shuttles containing the colored yarn pass the "weave" through the "warp," or lengthwise threads.

liest of relations between the management and the employes, all of which promote cooperation and efficiency and make for maximum production.

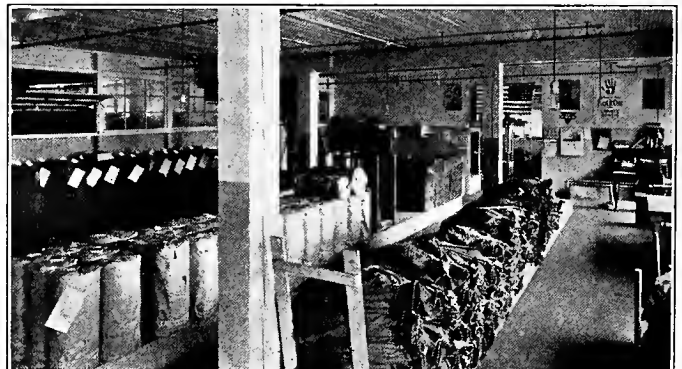
The Lesson to Industry

The problems overcome in marketing this western product apply to every new industry which we on the Pacific Coast might undertake. Yet the fact that Oregon City Woolens have achieved a national reputation and built up a national market is positive proof that this same market and same reputation awaits any product our factories might turn out. The West is noted for its intensive energy, its ingenuity and its resourcefulness. Let these three traits be coupled with the vast resources, the unlimited power facilities, and the ideal manufacturing conditions, and let them be backed with a highly trained sales force and an intensive advertising campaign, and there is no market in the world in which western manufactures can not compete, be it prejudice, prices or transportation problems which they must overcome.

The manufacture of woolens on the Pacific Coast is yet in its infancy, but the equable climate, favorable working conditions and high type of skilled labor obtainable, excellent water, adequate supply of cheap hydroelectric power and proximity to a large supply of high grade wool are all very potent factors which will stimulate the growth of the industry.



After being shrunk, dried and napped the goods pass into the cutting or manufacturing department where the finished garments are fashioned by style experts.



Shipping room of the Oregon City Woolen Mills, where every step in the process of making and tailoring woolens "Woven where the wool is grown" is taken under one roof.

Who Pays the Freight on Nationally Advertised Goods?

The Western Angle on the Freight Question from the Standpoint of the Jobber and the Manufacturer's Agent Who Must Meet a Buyer's Market with Freight at One-Tenth the Value of the Product

By CLOTILDE GRUNSKY

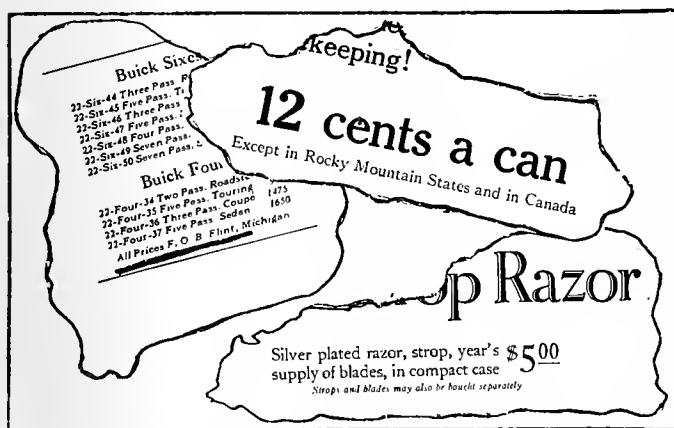
Associate Editor, Journal of Electricity and Western Industry

"FOR Sale in All Parts of the United States for \$5.00." This type of advertisement is not so common as it used to be, but it still exists. It is still possible to buy \$15 Kodaks for \$15, alike in San Francisco, New York and Denver. A \$6.95 iron sells for six dollars and ninety-five cents the country over and the price at which you purchase numerous brands of food and toilet preparations in all sections of the United States is frankly announced in magazines of national circulation. On the other hand it is not uncommon to learn that the washing machine which you could purchase for \$150 in the East is retailed at \$175 west of the Rocky Mountains. Vacuum cleaners which sell for \$42.50 as far west as Chicago, bring \$47.00 in Seattle. Campbell's Beans,

must pay anywhere from 7½ to 20 per cent of the value of the shipment in freight before they reach their destination, it is obvious that he must add the additional cost to his price in order to do business at a profit.

With nationally advertised articles on which eastern quoted prices are generally known, this practice is not always understood. When the customer learns from the magazine that the retail price of a given piano lamp is \$7.50 and her dealer offers her one at \$8.50, she is not always satisfied with the explanation that the freight differential is to be blamed. Moreover, in cases where competition is offered by local manufacturers, price levels cannot be raised above a given point or trade will be lost.

In the case of the larger electrical appliances, another factor enters. It is being more and more recognized that the major sales argument of the present must be directed against the customer's impression that electrical conveniences although desirable, are expensive. There is therefore a fundamental drawback to adding from \$15 to \$25 to an article which is already difficult of sale. Even if the western public is gradually coming to recognize that they must expect to pay for the privilege of living on the Pacific, nevertheless high prices, whatever their explanation, must limit sales. It is an incontestable fact that more vacuum cleaners will sell at \$50 than if you raise the price to \$65.



THREE METHODS OF CHARGING FREIGHT

Razors sell for \$5.00 the country over, irrespective of your distance from the factory. Why should not freight on automobiles be entered as a lump sum as one of the costs of production, thus permitting the Westerner to buy his car at the same price he could purchase it for in Michigan? The manufacturer of baked beans has taken the middle course of averaging the freight and concealing it in the selling price up to the point at which he evidently felt it too great to be borne—with consequent discrimination against the Intermountain district.

which used to be synonymous with 10 cents, now run a catch line at the bottom of their advertisement reading "12 cents except in the Rocky Mountain States and Canada," thus introducing a still different line of distinction.

Variations in Practice

What is the reason back of the variation in practice? Why should one line of goods cost no more in Los Angeles than in Boston and another show a fifteen per cent difference? The question depends fundamentally upon who it is pays the freight on the article in question. On certain nationally advertised lines which are sold largely on brand without over-keen competition, it has been found possible to lump the freight charges against the whole output of the factory and sell at a uniform price, delivered in any section of the United States. If the goods are sold F. O. B. point of origin, however, and the jobber

Losing the Western Market

The question, therefore, is one which is giving western trade considerable thought. To put the question concretely—one firm which does a general jobbing business is able to purchase a given make of electrical appliance F. O. B. point of origin at \$21.50. Freight on the individual appliance amounts to \$1.50, making the total cost, delivered, \$23.00. They have found it necessary to meet the market by selling certain of these machines at \$23.50, thus allowing a profit of only \$.50 from which their overhead and sales costs still remain to be deducted. Of course, it is not to be expected that they could continue in business unless other lines were a little more profitable. They are about ready to take the stand on products on which prices are nationally advertised, that the freight should be absorbed by the manufacturer—or else that they cannot handle the product.

Another case is that of an eastern manufacturer who sells a fixed price product in the electrical line. Up to recent freight increases, it has been the practice of the western jobbers to stand the freight difference out of the generous margin allowed them. With freight at 20 per cent of the value, they cannot

afford to continue the practice. The manufacturer is not prepared to absorb the freight nationally and in consequence this product is being withdrawn for the time from western markets.

Where the Manufacturer Absorbs the Freight

There are several possible solutions. As suggested, the manufacturer might charge the freight in against the cost of production of his product and quote a uniform price to all sections. This is done in numerous cases, notably in the electrical industry by the manufacturers of heating devices who are bound by an agreement in the Marsh patents under which they manufacture by which freight on shipments over 100 pounds is borne by the manufacturer. This has worked very satisfactorily and results in uniform country-wide prices, with a consequent advantage in being able to quote prices in advertising without injuring local markets.

There is indeed, some justice in the contention that if a manufacturer wishes to quote a uniform price, he must expect to follow some such practice—that is, of himself quoting a uniform price F. O. B. all jobbing centers. If he is not prepared to absorb the freight, he cannot expect an enthusiastic support from western agents or jobbers who must pay the freight out of their own margin of profit. The bulk of the appliance business, from the sheer force of population numbers is still done in that three-quarters of the country which lies on the eastern side of the last freight barrier—and it is contended that the distributed burden would not be beyond reason.

On the other hand, where no such general agreement exists as that provided for by the Marsh patents, it is not to be expected that all manufacturers will take similar action and competition in eastern markets might make it difficult for a manufacturer to raise his price in order to cover western freights. Eastern trade centers are prompt to protest and to raise the argument that each section of the country should support its own business. Practice varies at the present time from the uniform prices already mentioned on heating devices and on certain small articles of the trade such as lamps and some small fittings, to fixed prices F. O. B. factory, which place the entire burden upon the local consumer. In some lines the manufacturer shares a small portion of the freight, one concern allowing all over the freight to Chicago, thus placing jobbers upon this coast on the same basis as those of the middle West.

Charging Freight to Western Consumers

It is becoming more and more common, however, for price differences between the East and West to be frankly recognized. It is no longer a shock for the customer to be told that he or she must pay more for a stove or an ironing machine because of the freights—and within reason, he is prepared to accept the fact. Unquestionably the market is somewhat limited by the additional cost, but the greater average purchasing power of the westerner perhaps accounts for the general testimony, except in a few

cases, that goods were sold and are sold frankly at higher prices than in the East. How high the market can be pressed is another question. Western competition is already arising in some lines and in others such as some of the larger household equipment, it is felt that an upper limit of prices has been reached. The object becomes one of reducing freights to as low a point as possible.

Possibilities of Water Shipment

Water shipment has been adopted as the solution wherever possible. In general water freights are under one-half of rail rates. For certain classes of goods they have always proved attractive. One firm handling hardware shipped something like 72 per cent of its stock by water even before the war. Now the figure comes nearer being 85 per cent.

Opinions as to the service rendered are uniformly good, with a few comments on the length of time it takes some vessels to reach their destination. Orders which arrive within thirty days from New York are considered satisfactory, but there are exceptions to this rule. Taking into account rail delays, however, it may fairly be said that on the whole shipments take not more than ten days longer en route. In figuring profits, the delay involved before the money can be collected must be reckoned with. There is further, of course, no daily steamer service and this factor of loss must be figured in. Individual shippers who have warehouses situated directly on spur tracks lose this advantage when shipping by water and the cartage may offset the difference in freights. On the whole, however, the Panama Canal route has proven the salvation of coast trade and brought freights down to somewhere near the former rail level.

Of course, factories are not always located on the Atlantic seaboard, nor are the purchasing centers necessarily Pacific seaports. In such cases a combined rail and water shipment is sometimes found advantageous. One wholesaler bringing goods from the upper Mississippi Valley to Sacramento, California, found it cheaper to ship via the Mississippi River to New Orleans, thence through the Panama Canal to San Francisco and from there by boat up the Sacramento River to their destination, rather than by the direct rail route.

Taking Advantage of Carload Lots

Rail shipment must nevertheless always remain the most important factor in western business. Whether shipping by water or rail, carload rates are a big item in keeping down cost and should always be taken advantage of where conditions of trade and the character of the product permit. In cases where no one community uses enough of the product to make up a carload, the manufacturer's agent has on occasion stepped into the breach, shipped to San Francisco in carload lots and then subdivided and reshipped in smaller quantities to other cities on the coast. That even the double freights thus paid on portions of the shipment may prove a considerable saving is seen by the fact that carload rates run about one-half of the regular schedule. For instance,

rates on glassware amount to \$11.33 per hundred pounds in less than carload lots. For a carload it amounts to \$4.92 per hundred pounds, or less than half.

The Special Problem of the Intermountain States

Owing to the absence of water competition, the Intermountain district at the present time probably suffers more than any other section of the country from the freight situation. It is this condition which is acknowledged in the Campbell advertisement quoted at the beginning of this article, which excepts the Rocky Mountain States from the general price average. From the standpoint of such trade centers as Denver, Salt Lake and Spokane, therefore, the system of freights absorbed entirely by the manufacturer or of two flat prices for the country, one east of the Rockies and one west, are a great improvement over the "Eastern list price plus freight" system. The first of these arrangements places the burden of western freight upon all who purchase the product, the second divides it at least over the entire district this side of the Rocky Mountains and somewhat evens the disadvantages of an inland location. On the whole, however, the only answer to this situation is the frank facing of freights, taking advantage, of course, of carload shipments and other methods of reducing rates to their lowest possible point.

Stimulus to Western Industry

One result of the consequent high prices in interior markets has been greatly to stimulate local competition where this is possible. Denver reports a rubber company which has not only taken over the local market, but is entering into national competition, a bedding and mattress concern, a new packing company which is successfully competing with the "Big Five" and a number of cereal products companies, as well as a recently organized switchboard manufacturing company.

Similar activity is reported from all sections of the Pacific coast, combined with a movement which is equally significant in its way toward the establishment of western branch factories and assembling plants. This means not only a saving in freight but also a lesser stock requirement. With an assembling plant in the West it is possible to ship out parts of light but bulky articles with considerable saving of space—and it is also possible to operate on smaller working stock. An idea of how this operates is seen in the 50-60 cycle motor situation in Southern California. With material sent complete from the East it becomes necessary to maintain duplicate stocks for each, but with an assembling plant they can be made up to order from the same reserve of parts. Such bulky things as switchboards, moreover, could not compete with local manufacture if they were required to bear the burden of freight.

It has long been the practice of most of the larger eastern manufacturers to maintain local plants of small proportions for emergency situations—and it is surprising into what proportions their business has run. One such headquarters, too insignificant to be called a plant, is responsible for \$100,000 worth

of switchboard equipment during the past year, which business would otherwise have been lost to the company. The present freight situation has exaggerated the need and several such branch plants, recently erected or in contemplation, are the result.

The converse to this situation is seen in the action of the Prune and Apricot Growers' Association of California who since last year, are shipping their product in bulk to the East and have established a plant in New York City to pack for eastern markets. The western manufacturer seeking national markets is often compelled to open eastern manufacturing or assembling plants, as in the case of the Majestic Electric Development Company whose entire business east of the Mississippi River is handled through their Philadelphia and Kansas City plants.

The Answer to the Problem

There is no one answer to the freight situation. It is to the advantage of this coast to have freights as low as possible and any provision which will lower rates either actually or in effect is to be encouraged. However, the freight differential will always be with us. Except on nationally advertised articles sold on brand, eastern competition will always act as a counter force against the absorption of freight by the manufacturer. As western manufacturing enterprise grows and forces local competition, the problem will take on another angle and from the dignified position of a rival manufacturing center, the West will have more to say about who is to pay the freight. In the meantime the bill will continue to be placed in the main against the account of the western purchaser.

The problem is one of creating a demand for your goods or your services so that the consumer (whoever he is) will demand Jones' Marmalade or Babbitt Metal or whatever the product is, by name or brand and be willing to pay the price, East or West, because he feels it best for his particular use or because he has confidence in Jones and Company.

Key Route Has Most Densely Signalled Track

The Key Route system of the San Francisco-Oakland Terminal Railways claims the distinction of having the most densely signalled piece of track in the United States, 3.83 miles of track over which the movement of trains is governed and protected by 148 interlocking and automatic signals. Six hundred and forty revenue trains are operated in and out of the Key System Pier Terminal every twenty-four hours, and it is estimated that 1,125,000 passengers are moved 265,000 miles each month.

This company is the largest consumer of electric energy in the East Bay cities, using over fifty million kilowatt-hours per year. The system is fed from hydroelectric sources, energy being supplied from eight sub-stations advantageously located over the system. The sub-stations convert the power from 11,000 volts alternating current to 600 volts direct current. The feeder current on their pier feeder rises from 100 amperes to 7,000 amperes in twelve seconds.

Name	Location	Type of Prime Mover	Date of Completion	Present Capacity H. P.	Head Ft.	Ultimate Capacity H. P.	Transmission Voltage
CALIFORNIA							
GREAT WESTERN POWER CO.							
<i>Plants Completed Since January, 1920.</i>							
Caribou.....	Plumas Co. on No. Fork Feather River, 195 miles from San Francisco.....	2-30,000 h. p. Dbl. Overhung Allis-Chalmers Imp. Wheels..	5 / 7 / 21	60,000	1,108	180,000	165,000
PACIFIC GAS AND ELECTRIC CO.							
<i>Plants Completed Since January, 1920.</i>							
Spaulding No. 2.....	So. Yuba Riv., Placer Co., Cal.....	1-1335 h. p. Allis-Chalmers Turbine.....	11 / 1 / 20	1,340	145	1,340	125,000
Hat Creek No. 1.....	Hat Creek, Shasta Co., Cal.....	1-15,000 h. p. W-S-M Turbine..	8 / 1 / 21	16,750	216.8	16,750	60,000 pres. 220,000 ult.
Hat Creek No. 2.....	Hat Creek, Shasta Co., Cal.....	1-15,000 h. p. W-S-M Turbine..	10 / 1 / 21	16,750	201.3	16,750	60,000 pres. 220,000 ult.
Spring Gap.....	Middle Fork Stanislaus, Tuolumne Co.....	1-9,500 h. p. Single Overhung Pelton Impulse Wheel.....	10 / 1 / 21	10,050	1,865	10,050	104,000
<i>Work Now Under Way.</i>							
Pit No. 1.....	Pit River, Shasta Co.....	2-40,000 h. p. Allis-Chalmers Single Runner Reaction Turbines.....	7 / 1 / 22	93,800	454	93,800	120,000, 220,000 ult.
<i>Work to Be Begun by June, 1922.</i>							
*Pit No. 2.....	Pit River, Shasta Co.....		7 / 1 / 23	26,800	115	26,800	120,000, 220,000 ult.
SAN JOAQUIN LIGHT AND POWER CORPORATION.							
<i>Plants Completed Since January, 1920.</i>							
Kerckhoff.....	San Joaquin River, 40 miles from Fresno.....	3-14,200 Kva. Allis-Chalmers Generators, Francis Type Turbines.....	8 / 15 / 21	54,000	335	110,000
Kern Canyon.....	18 miles southeast of Bakersfield on Kern River.....	1 Allis-Chalmers Generator, Francis Type Turbine with White Hydrocone.....	8 / 17 / 21	12,000	260	60,000
<i>Work Contemplated.</i>							
Kings River Project.....	50 miles from Fresno on North and Middle Forks of Kings River:						
Balch.....	8 Units.....			2,385		162,615
Haas.....	5 Units.....			2,345		106,590
Helms.....	3 Units.....			1,585		50,430
Farnham.....	2 Units.....			1,460		33,170
Kings River.....	2 Units.....			385		26,250
Woodchuck.....	2 Units.....			1,155		10,500
Wishon.....	2 Units.....			122		6,830
Meyer.....	1 Unit.....			1,395		6,340
Peart.....	1 Unit.....			223		4,270
SOUTHERN CALIFORNIA EDISON COMPANY.							
<i>Plants Completed Since January, 1920.</i>							
Big Creek No. 2, 3d Unit.....	240 miles north of Los Angeles.....	Impulse Water Wheel.....	2 / 1 / 21	23,000	1,858	85,000	150,000
Kern River No. 3.....	130 miles north of Los Angeles.....	Vertical Francis Turbine.....	4 / 1 / 21	42,800	821	42,800	60,000
Big Creek No. 8.....	240 miles north of Los Angeles.....	1 P. Morris Vertical Reaction Turbine.....	8 / 11 / 21	30,000	729	167,500	150,000
<i>Work Now Under Way.</i>							
Big Creek No. 1, 3d Unit.....	240 miles north of Los Angeles.....	Impulse Water Wheel.....	6 / 1 / 23	23,000	2,131	85,000	220,000
Big Creek No. 3, 1st Unit.....	240 miles north of Los Angeles.....	Vertical Reaction Turbine.....	6 / 1 / 23	33,500	825	200,000	220,000
2d Unit.....			9 / 1 / 23
3d Unit.....			6 / 1 / 24
THE SOUTHERN SIERRAS POWER COMPANY.							
<i>Plants Completed Since January, 1920.</i>							
Adams Auxiliary.....	Owens River.....	Horizontal Turbine.....	2 / 22 / 21	3,375	150	3,375	87,000
<i>Work to Be Begun by June, 1922.</i>							
Forest Home.....	Mill Creek.....	Impulse Wheel.....		4,470	2,000	4,470	87,000
Leevining No. 1.....	Leevining Creek.....	Impulse Wheel.....		17,900	1,600	17,900	87,000
CITY OF LOS ANGELES.							
<i>Plants Completed Since January, 1920.</i>							
San Francisco:							
No. 1.....	50 miles from Los Angeles.....	2-22,000 h. p. Vertical Action Turbines W-S-M.....	7 / 6 / 20	44,000	530
No. 2.....	50 miles from Los Angeles.....	2-22,000 h. p. Vertical Action Turbines W-S-M.....	8 / 6 / 20	28,000	530	61,500
Franklin Canyon.....	Owens River.....	Turbines W-S-M.....	6 / 3 / 21	3,300
San Fernando.....	Owens River.....			9,300
CITY OF SAN FRANCISCO.							
<i>Work Now Under Way.</i>							
Moccasin Creek.....	140 miles from San Francisco.....	†3 Double Runner 25,000 h. p. Impulse Turbines.....		75,000	1,300	150,000
IDAHO							
IDAHO POWER COMPANY.							
<i>Plants Completed Since January, 1920.</i>							
Thousand Springs.....		Reaction Water Wheel.....	5 / 1 / 20	11,000	183	11,000	44,000 & 132,000
Shoshone Falls.....		Reaction Water Wheel.....	8 / / 21	16,500	214	16,500	44,000
UTAH							
UTAH POWER AND LIGHT CO.							
<i>Plants Completed Since January, 1920.</i>							
Oneida Plant.....	Bear River.....			40,200
<i>Work Now Under Way.</i>							
Olmsted Plant.....	50 miles south of Salt Lake City.....			7,370	17,018

Progress of Industry Handicapped by Lack of Engineers

Industrial Application of Electricity Suffers from Unbalanced Development by Lack of Engineers in Factories and Concentration in Manufacturing Plants and Power Companies

By LOUIS F. LEUREY
Electrical Engineer

THE present condition of industrial electricity is without parallel in the application of any other force or process in the whole range of industry. Every other form of power and every type of process and equipment has been developed by a balanced and coordinated plan which capitalized the trained experience within the industry as well as the trained experience from without. Electrical applications alone have been developed almost entirely from outside of the industry and have been the result of the engineering and business ability of electrical manufacturers and their jobbers and of the power supply companies.

The purpose of this article will be to show some of the deplorable conditions that have arisen due to this unequal development and to suggest how the electrical industry as a whole can inaugurate and support a constructive remedy. The conditions outlined in this article are based particularly on Pacific Coast conditions but except in the matter of degree they apply to every other geographical section of the nation.

Engineering Personnel Inadequate

I do not believe it to be an exaggeration to say that less than 5% of the industrial companies of the Pacific Coast employ, or retain, trained industrial electrical engineers and there are probably less than 50% that employ or retain electrical advice of any character. By the term industrial electrical engineer is meant a man thoroughly trained in electrical engineering and who has had, in addition, sufficient experience with industrial processes and organizations to properly interpret the requirements of these processes and organizations to all other branches of the electrical industry.

There are many able and practical electricians at work in industrial establishments who are performing yeoman service for their companies but there are mighty few who could qualify under the above definition. The great majority of these men while acquainted with the process are utterly handicapped from a technical and economic viewpoint, and are further handicapped by an interminable amount of detail which makes impossible any concentration on definite problems. I do not mean to convey the impression that these men never evolve good ideas and constructive suggestions to other branches of the electrical industry but I do claim that rarely, if ever, do they work out anything of value in its entirety nor do they creatively impose their ideas upon other branches of their own or the electrical industry.

As a matter of fact most of these men are held of nominal importance in their own factories and are

practically held responsible but for one thing, "keeping the motors running and the lights burning," instead of being considered the responsible head of the plant's motive department. Instead of being encouraged to produce creative work in extending the field of electrical usage, they are held to a monotonous routine of upkeep duties which usually take the last place in the factory's scale of precedence.

On the other side of the picture we see a brilliant array of generator, motor, transformer and control specialists employed by the manufacturer at his works and an equally brilliant array of similar specialists and salesmen engineers in his branch offices all organized and functioning to impose their ideas and their equipment on the factory owner. Similarly, the power companies are represented by a splendid group of engineers and engineer salesmen in all their dealings with the factory owners and it goes without saying that his power supply will be installed after the manner which to them seems the best. I do not mean to say that the manufacturing group and the power group have not kept in close touch with the factory owner. In fact practically all the worth while engineering advance made by the factory in extending electrical usage has proceeded from the research and the guidance of engineers employed by these two major branches of the industry. The fault lies in the fact that these engineers have left the factory owner over-served and under-educated and the initiative has been taken from him on problems that are peculiarly his own.

On the other hand when we consider the utilization of steam, of gas, of oil, we find that a large and important part of the utilization equipment and methods have been developed by the factory organizations or by engineers employed directly by them. Practically all of the important manufacturing companies of the Pacific Coast are maintaining research and development work in connection with chemical problems and process equipment generally, but serious attempts to further the use of electricity as a power agency or as a flexible medium in process applications are conspicuous by their absence.

As a result of this unbalanced distribution of engineering personnel in the industrial application of electricity there has arisen a number of deplorable conditions all of which are costing the factory owner unnecessary expenditure and all of which are retarding the proper progress of the electrical industry.

Absence of Planning Is Common

One of the most costly conditions due to this lack of engineering is the entire lack of a comprehensive switchboard and distribution arrangement covering the initial electrical installation in the fac-

tory. The Electrical World, in one of its editorials, expressed this conditions very simply but very accurately in the following sentences: "The most frequent trouble with the electrical industrial installations is that they just grow without a properly coherent plan of operations. A few motors go in, then a few more, and by the time the work is complete it is tangled and as a whole inefficient."

The usual plan is for the factory owner to turn all work over to his electrician for installation or to call in a contractor and ask him to furnish a bid for the installation of so many motors. The contractor may or may not possess an engineering training but even when he does he has neither time nor the special experience in factory processes to adequately plan the work. Either the future expansion of the plant's motor equipments is disregarded altogether or else an uncalled for amount of "frozen investment" is introduced in the form of oversize wires and switchboards which rarely ever become active. Very often the next block of work is installed by another contractor who has no record of what the first man had in mind and there finally results the inevitable tangle. The major part of this writer's practice proceeds from the necessity of finally unsnarling these tangles and too often the knot must be cut by completely rewiring the job. With the rapid growth of electrical development there naturally results a certain amount of obsolescence both in equipment and also in methods of distribution as a plant grows older. However, this much is fundamental, an arrangement all of whose elements have been planned so that units of initial equipment can be coordinated with units of subsequent equipment will never fail to function under any change in conditions. The wastage from improperly installed electrical equipment has been enormous when the country as a whole is considered and the frame of mind of a factory manager who must rewire his factory after four or five years of usage can better be imagined than described.

Results of Faulty Purchasing

Another deplorable condition which is the direct result of the absence of trained industrial electrical engineers from factories consists in a haphazard system of specifying electrical equipment and electrical supplies for purchase. Right here, we must in fairness, absolve the purchasing agent from any responsibility and place the responsibility where it belongs at the door of the factory electrician and managers to some extent, but principally to conditions existing in the electrical industry as a whole.

This condition of faulty purchasing is most accentuated in those plants which are remote from the buying centers and in which all requisitions travel from factory by correspondence to the purchasing agent in the city. Picture the condition of the plant electrician! He is generally alone or has a helper who goes for the mail or fixes the company's Fords when he is not assisting the electrician. With the spasmodic aid of this helper he is struggling to keep his motors rewound and running; to keep his factory re-lamped and fused and in addition must

install the circuit for a new motor and run a pole-line extension to one of the company's outbuildings. He finds there are no spare switches on the switchboard and so has recourse to a catalog and requisitions what seems to him to be the proper switch. The purchasing agent in the city gets the requisition for a type XZ 300-ampere switch and immediately sends an inquiry to the house that sells the XZ switch. But being a purchasing agent whose function is to protect his employer's money and to take nothing for granted he very wisely sends this inquiry to several other companies and then the fun begins. No other condition than this is more typical of the complete lack of proper liaison between the factory, the purchasing agent, and the electrical industry. This practice alone is costing the electrical industry thousands of dollars annually in unnecessary sales effort, subsequent cancellation and a dissatisfied ultimate user of the equipment. Plant electricians and the purchasing agents are continually heckled and torn between the contending claims of various manufacturers with the result that annually many thousands of dollars are misspent on perfectly good equipment applied to the wrong set of conditions and thousands spent in equipment that would be wrong under any kind of conditions.

Two policies, either one of them fundamentally wrong, have arisen due to the inability of the factory to initiate its own policy in purchasing electrical equipment. In one case the owner throws himself bodily into the hands of one of the manufacturing companies and will not even consider any other equipment. No manufacturing line is complete enough to justify a rigid adherence to this plan and it inevitably leads to a stagnant condition in the industry. In the second place, a far worse condition exists where, due to the conflicting claims of manufacturers and a vacillating policy of the factory management or due to rapid changes in personnel, a motley array of electrical equipment of all kinds and types are assembled under one roof.

The writer has seen as many as five different voltages operating in one factory and an assemblage of electrical equipment both new and obsolete that would do credit to a museum of electrical history. The writer has further seen thousands of dollars of warehouse stock in up-country factories that as far as any commercial value is concerned was as dead as a Dodo. There are times when a jobber has to take back some of this dead stock at terms disadvantageous to himself simply to hold a good account on his books. The greater percentage of this waste is preventable and again the result of improper liaison between the factory and other branches of the electrical industry. It is very hard for anyone except the man who has practiced in all branches of the industry and has a fundamental knowledge of business to realize how little commercial value there is to electrical goods once they have left the jobber's shelf and are not put to use on a definite piece of construction. This is especially so once the standard package has been broken.

Western Plans For Making It An Electrical Christmas

"Electrical Week" will be the Feature of a Campaign Utilizing the Facilities of All Branches of the Electrical Industry to Convince the Public that "Electrical Gifts are Wonderful Gifts"

By VICTOR W. HARTLEY
California Electrical Cooperative Campaign

WITH the intention of eliminating the weaknesses of past attempts, plans have this year been inaugurated to effectively demonstrate to the public that the solution of the annual gift problem is to be found in helping "Make it an Electrical Christmas." These plans which comprise newspaper advertising, slide advertising, window display, direct mail and addresses to club luncheons have been prepared by the California Electrical Cooperative Campaign. It will take the united effort of all four branches of the industry, however, to put them across effectively. An attempt will be made to sell the electrical appliance idea to the public. The entire period from the middle of November until Christmas should be marked by hard, concentrated effort on the part of everyone in the industry. It is going to take work, and lots of it, to put the plans over. The department stores will have Santa Claus and other features to draw the people within their doors—the electrical dealer must offer some counter-attraction to bring them to his store. But first the store must be made attractive. It must be spotlessly clean. The stock must be neatly arranged upon the shelves. The window must be trimmed with a great deal of care. Then he must decide upon some feature attraction, some means of making the busy shoppers come into his store. Those dealers possessing a radio telephone set have their problem solved. Everyone will "Stop, Look and Listen" when there is a radio concert being given within. It is like looking into a deep hole; or watching a steeplejack on a high tower—it's just human nature to do it.

Proper Window Decoration

To assist the dealer in his window decoration the Cooperative Campaign has prepared a set of thirty cards which they are selling to the dealers at \$1.50. This set of cards tells two stories—the electric appliance story, and the electrical convenience outlet story—and has been prepared for use in either of two ways: Those dealers whose windows are sufficiently large to permit a live demonstration can use the cards as a series, one at a time being displayed on an easel, and the message illustrated by the demonstrator; those dealers whose windows will not accommodate such a demonstration can use the cards to point out the merits of the different appliances in a set display.

Another very effective means of spreading the electrical Christmas message, if carried out by the entire industry, is for everyone to have printed upon a month's supply of stationery the slogan adopted for this Christmas sales-promotion work—"Electrical Gifts are Wonderful Gifts—Make it an Elec-

trical Christmas." To have this printed in small, square, red letters, the first half across the top of the letterhead and the last half across the bottom, would cost the individuals approximately \$2.50 per M letterheads, yet the cumulative sales force in the constant repetition of that slogan on every letter received from the electrical industry would be enormous.

"Electrical Week"

This sales campaign will be carried on during the entire month preceding Christmas, but the center of force will be directed on that period early in December when the greatest bulk of shopping is done. To accomplish this the week of December 5-10 inclusive has been termed "Electrical Week" and will be celebrated as such by the electrical industry throughout the state, invitations being extended to the general public to participate.

In San Francisco, Los Angeles and San Diego, Electrical Week will be started off with large luncheons in which the local electrical organization will act as host to the various business men's associations and clubs. These luncheons will be of a nature similar to the Industrial Conference at the last N. E. L. A. convention, and will serve as an opportunity for the leaders of the electrical industry to tell the outside world of its dependency upon electricity, and of the inter-relation which binds the electrical industry inseparably to its fellow industries.

As a further means of helping sell the whole big electrical idea from every possible angle the Cooperative Campaign plans to install its portable lighting exhibit in the Industrial Exposition which will be in progress at San Francisco from November 19 to December 10. Here the story of industrial and commercial lighting will be told twice daily, and between the lectures and demonstrations there will be shown to the audience motion pictures telling the electrical convenience outlet and electric appliance stories.

Selling the Electrical Idea

The members of the electrical industry are individually sold on this electrical Christmas idea and are to be asked to sell that idea to those who make the purchases. Let them all tell the same story—"Electrical Gifts are Wonderful Gifts—Make it an Electrical Christmas," and let them tell it repeatedly, convincingly and forcefully.

Christmas Campaigns in the past have only been partially successful due mainly to the scattering of effort on the part of those interested. As regularly as Christmas time rolls around there arises within the electrical industry the determination to

make it an electrical Christmas. And just as regularly as Christmas has passed there has been a realization that all that might have been expected was not accomplished.

There is no need to ask why—the reason is obvious. The fact that it should be an electrical Christmas has never been sold outside the industry. There has never been a whole-hearted, concerted, co-operative effort to tell the buying public why electrical gifts are the logical, practical and acceptable solution of their gift problem.

The purpose of "Electrical Week" will be to eliminate these past mistakes and sell the idea to the public.

B. C. Association Inaugurates Plans

"Say Merry Christmas Electrically" is the slogan of the British Columbia Electrical Cooperative Association for the holiday season. Coordinated window display and newspaper advertising will be used to promote the sale of power consuming devices for the Christmas trade. The Electrical Cooperative Association working with the Vancouver Association of Contractor-Dealers will supervise an intensive advertising and merchandising campaign beginning Nov. 7th.

In Vancouver and vicinity the paramount objection in the minds of the public to the use of electric appliances seems to be the cost of operation. This objection is based upon an erroneous conception of the amount of power consumed by such devices. It is proposed to combat this impression by an educational advertising campaign for a period of two weeks. Show cards will be used, which show average cost per week for different appliances under the caption,—

**"ELECTRICAL APPLIANCES
are economical to operate."**

For example: Under the above caption would be listed:

**"ELECTRIC WASHING MACHINE
Average washing 2 hours per week,
Cost 3 cents per week."**

These cost figures were derived from costs published by the Society for Electrical Development supplemented by actual tests made by the B. C. Electric Company. These showcards will be displayed in dealers' windows for the period Nov. 7 to Nov. 19, and at the same time the central station and manufacturers will publish the same information in their newspaper advertising space.

After this two weeks' educational advertising campaign the following schedule will be followed in advertising and window display by all branches of the industry:

Nov. 21 to Nov. 26—Table Lamps.
Nov. 28 to Dec. 3—Washing Machines and Suction Cleaners.
Dec. 5 to Dec. 10—Small Appliances.
Dec. 12 to Dec. 24—General Christmas Suggestions.

During the week Dec. 12 to 17 a cooperative newspaper advertising campaign will be instituted. By

pooling advertising space of individual firms larger space can be obtained in the various newspapers with increased effect. During the entire campaign the dealers will follow the general outline of the campaign in their own advertising space and in window displays.

Electrical Christmas Week in Denver

Realizing the value of cooperative advertising, the electrical interests of Denver, through the Electrical Cooperative League of that city, will launch a campaign early in November to run for four months.

Manufacturers, jobbers, the central station and the majority of the contractor-dealers are participating in the campaign which has been laid out to serve a double purpose, to emphasize the idea of "Make this an electrical Christmas" and as a feeder to the special campaign advertising the exhibition of Denver's fully equipped electrical home which will be displayed shortly after the holidays.

A quota of five thousand dollars was set up, divided into three groups—one thousand dollars from the manufacturers and jobbers, two thousand dollars from The Denver Gas and Electric Light Company, and two thousand dollars from the contractor-dealers, which was underwritten by their local association through E. C. Headrick, president.

It is expected that about two-fifths of the subscription to the campaign will be spent during the first three weeks of December, at the time when most of the Christmas shopping is being done. Dealers are being circularized and every effort is being made to impress upon them the necessity of completing Christmas plans before this time.

The first or second week in December will be featured as "Electrical Week." The campaign will provide for special direct advertising on the part of dealers taking an active part in the campaign, by the use of window cards and other cards to "tie-in" with the newspaper advertising and other publicity. Every encouragement has been given to insure as much tie-in copy as possible and the total is sufficient to warrant a complete electrical page in those issues of the newspapers, which is the only medium used in the campaign.

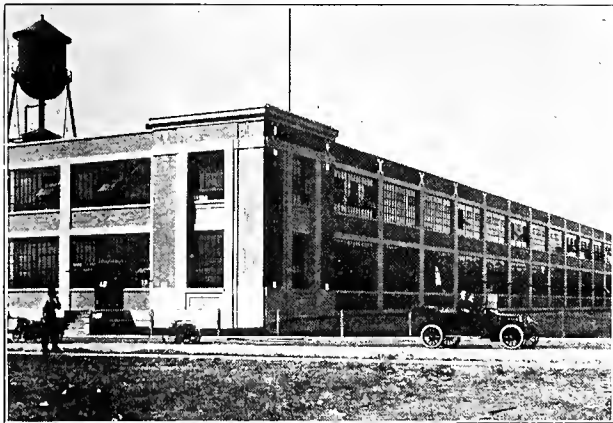
A local advertising agency is handling the campaign. The copy is being prepared in advance so that all contributors will be acquainted with the motif of each "ad" and proper tie-in copy can be prepared. The Cooperative League emblem featuring the caption "Do It Electrically" is being emphasized along with the slogan "Make This an Electrical Christmas."

Campaigns as conducted in other cities and data in the trade journals have been carefully analyzed in order that every advantage can be had in making the campaign a success.

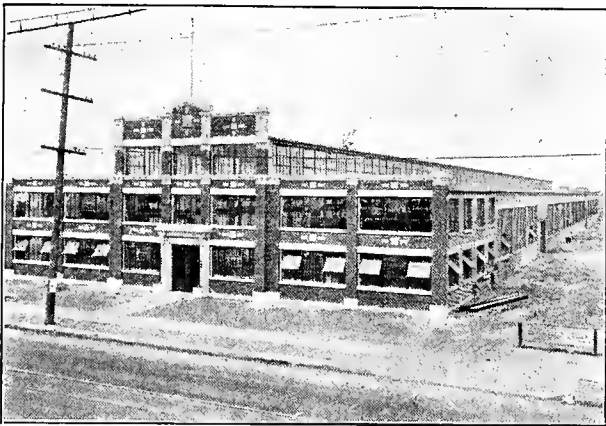
The Rocky Mountain Electrical Cooperative League is planning an extensive Christmas advertising campaign, and is considering "tying-in" with a Salt Lake newspaper which conducts an annual Christmas spread.

High Freights Bring Many Factories to the West

One of a Pictorial Series Featuring Interesting Applications of Electric Service, Advances in Home, Industrial and Power Construction and Noteworthy Developments in Western Progress



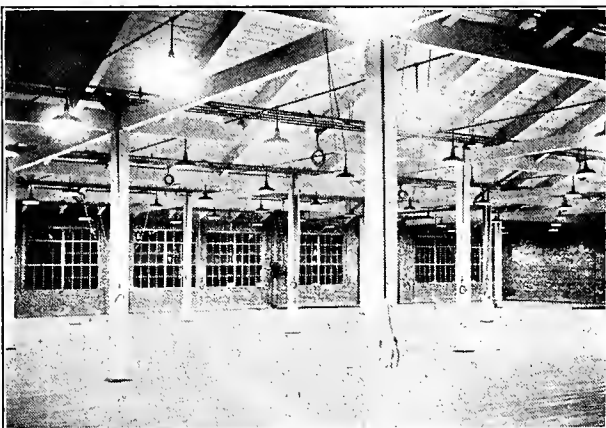
F. O. B. factory has kept more than one customer from buying the car which was just beyond his means. The Chevrolet Motor Company has overcome this difficulty by establishing a branch in Oakland, California, from which all orders from the western states are filled.



The Rich Steel Products Company of Battle Creek, Michigan, finds an immense market for automobile parts in the West, all orders from states this side of the Mississippi being supplied by the new Los Angeles factory which occupies two buildings, 120,000 sq.-ft. area.



The Northwestern Metalware Company with its home office in Minneapolis has recently established a Portland branch factory to supply its western trade in order to overcome the handicap of high freight rates. Wash boilers, stoves and other sheet iron ware are made here.



Western plant of Western Electric Company at Emeryville, California. Several of the eastern electrical manufacturers have established western factories or assembling plants to overcome the burden of high freights and to lessen the need for maintaining large stocks.



Richmond, California, plant of the Certain-teed Products Corporation. This is a \$25,000,000 eastern company with main offices in Philadelphia. Roofing materials, varnishes and felt are made in this western plant. The manufacture of linoleum will be taken up later.



One of recent factories to establish a western branch is the Planters Nut and Chocolate Company of Wilkesbarre. Their San Francisco plant occupies 115,000 sq. ft. of floor space and will have an annual output of \$8,000,000, with one item of 40,000,000 lbs. of peanuts.

Study Course

A University Accounting Course for the Contractor-Dealer and the Business Men in the Small Industrial Plant

By PAUL B. KELLY

HOW TO INCREASE THE RATE OF TURNOVER IN ACCOUNTS RECEIVABLE

Turnover figures are very important. The turnover rates are indicative of the efficiency of the dealer in making his capital work. The monthly turnover rates are merely approximations but serve as immediate indicators. The annual rates of turnover are accurate and are trustworthy as a basis for comparison with other businesses. Normal rates of turnover in businesses of various sizes will in time be determined and will serve as a valuable standard by which the dealer may judge his own efficiency.

A low turnover in accounts receivable usually means that too much capital is tied up in the form of customers' accounts. The most common causes of low turnover rate for this asset are:

1. The concern's customers do not pay their bills promptly.
2. The presence on the books of many worthless accounts on which payments never are received materially lowers the rate of turnover.

The second cause for a low turnover rate can be easily eliminated. Accounts which are really worthless and for which there is no hope of collection should be written off the books. A record of such accounts should be kept in some file or book so that if a possibility of collection arises, the data will be on hand.

The first cause of a low turnover rate in accounts receivable can be eliminated only by the adoption of a collection system designed to stimulate payments. Many people if not frequently reminded and gently urged will postpone payment of their obligations upon very slight pretext. Very often contractor-dealers do not make a definite effort to collect their bills promptly because of the fear that they may offend their customers. This is a foolish fear for a business man. If a reasonable collection policy is followed, no customer whose patronage is worth having will be offended.

Definite Program Is Suggested

The following collection program is but one of numerous simple plans that might be pursued. Of course, a system of this sort need not be rigidly applied. The contractor-dealer, when he thinks it advisable, may vary it by writing a personal letter, or by seeing the debtor himself. A system such as this is designed to promote prompt payment on the part of the ordering customer with whom the proprietor has no personal friendly relations. It will be found, also, that the loss due to bad debts will be greatly reduced.

The following steps should be consecutively taken until the debt is paid:

Furnish the customer with a bill immediately when a purchase is made by him or when a job is completed.

On the first of the next month send the customer a statement of his account.

Two weeks later send the customer another statement of his account. A statement received in the middle of the month will draw the customer's attention to the account and will serve as a hint that prompt payment is expected.

On the first of the ensuing month another statement should be sent. A form letter, well multi-graphed, addressed, signed, and bearing every indication of being a personal note, should be enclosed.

Two weeks later another statement and another form letter should be sent. The second letter should be longer and more firm in tone. But, the second letter should be courteous and suggest excuses for the silence of the customer who has been merely negligent. The customer might not have paid or written because of illness or absence. There may be a mistake in the account which the customer has intended to take up before paying. However, this letter should point out the fact that numerous statements have been sent; it should state what the usual terms of credit are; and it should indicate the fact that the bill is now considerably past due. Payment, or an explanation of the delay, should be asked for.

If at the end of two weeks more, no reply has been received, a short, decisive letter should be sent with another statement. This letter should state that if the customer does not remit within a specified number of days, the account will be turned over, without further notice, to a collection agency. It is well in this letter to appeal to the customer's fear of notoriety and loss of credit standing by suggesting the harsh methods which these agencies often pursue. The letter may express regret that this measure has to be taken, but, it should be pointed out, the refusal of the customer to remit or even to reply makes the step necessary.

If this letter does not secure a remittance or a reply within the time allowed, the account should be given to a collection agency. Although such agencies charge considerable fees this is the best procedure for it is clearly the intention of the customer not to pay. However, it will rarely be found that this step is necessary. The series of statements and letters have a cumulative effect. The customer pays as he should and does not feel offended because of being reminded.

Increasing Production in Industry

Shortcuts in Management and New Power Applications That Have Reduced the Cost of Manufacturing Processes or Increased the Rate of Production.

Ideas and Suggestions by Practical Men.

Treated Wood Ideal Material For Construction Purposes

Industry in this country now finds itself confronted as at no time in the past with high cost of production and an increased demand for lower prices of materials produced. To meet this unusual situation careful analyses of methods and costs are constantly being made in order to effect economies in operation. Marked results have been shown in various lines by standardizing methods and by the utilization of material which requires low maintenance expense.

To the engineers responsible for the design, construction, and maintenance of structures, accurate information on the relative cost and permanence of various materials is of the greatest importance. The lack of such information prevents a close estimate of the probable annual cost of structures of different kinds and is bound to result many times in the adoption of un-economical materials or methods.

There is no industry, however small or great, that does not require wood in one form or another, and by wise selection and use a considerable saving can be obtained. Wood on account of its lightness, durability, strength, adaptability, and low cost is the ideal material for construction purposes. While not all wood is durable, it can be made so by the proper use of a wood preservative, and there is a good preservative and a method for using it suitable for every need.

Timber preservation has been practiced for centuries, although it was only

THIS DEPARTMENT

will be devoted to a discussion of practical problems of industrial operation and management. Readers' requests for information will be published in each issue, together with the answers to previous questions. It is hoped that readers will take full advantage of this opportunity to profit by the practical experience of others and to give others the benefit of their own discoveries. Space rates will be paid for answers which are published.

approximately fifty years ago that the first pressure-treating plant was built in the United States. The treatment of wood was not begun in this country because of the scarcity of timber, but because of the high cost of replacing it; and many of the timbers pressure-treated with creosote in the early seventies are still in service and in an excellent state of preservation.

Treated timber means permanence at low cost since well-treated material will last several times as long as untreated wood and is usually more economical than other materials of construction. Properly-treated wood resists decay, marine borers, and insect attack, thereby effecting an immense saving to the user.

Treated wood is used not only for railway construction and for piling, posts, and telephone and power poles, as is commonly supposed, but it is the most economic material for building

construction of all kinds, including culverts, highway bridges, wharfs, storm sewers, flumes, tanks, mine supports, and so forth.

By proper preservative treatment wood gives better service, lasts longer, lessens the fire hazard, renders the cost of maintenance practically negligible, and reduces danger of collapse from loss of strength occasioned by decay. In addition, it is a material factor in the conservation of our forests, since one well-treated timber does the work of several untreated sticks.

Selection of Proper Sized Exhaust Fan Is Important

While considerable data has been published as to the air capacities which should be provided to insure good ventilation in installations of various kinds, the engineer or contractor who makes the installation must, in the last analysis, rely very largely on his good judgment, common sense and previous experience, if he is to secure satisfactory results at the minimum expense of equipment.

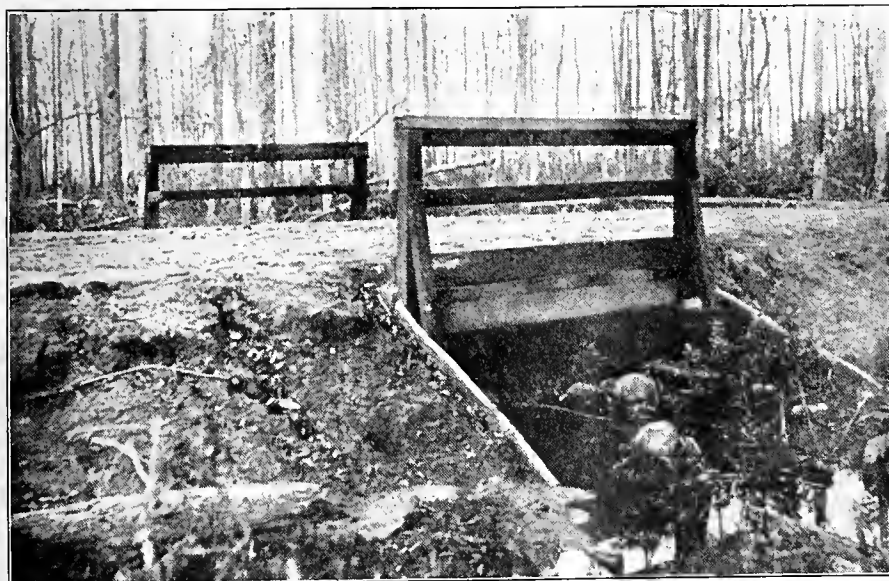
The following figures may serve as a guide to preliminary calculations and may be of some assistance in determining the capacity required of the equipment. These figures indicate the volume of air in cubic feet per minute which theoretically, should be provided for each person occupying a room of the character designated.

Ordinary hospital wards.....	60	cubic feet
Hospital wards, epidemic.....	85	" "
School rooms	40	" "
Prison cells	20	" "
Prison wards	10	" "
Barracks	50	" "
Living rooms	20	" "
Auditoriums	35	" "
Theaters	30	" "

In installations such as kitchens, restaurants, shops and factory rooms where smoke, fumes and dust laden air must be exhausted, it is necessary to figure on the time required for changing the total air content of the room rather than on providing for a definite amount of air per person. The following figures will give an idea of the equipment necessary, which should have a rated capacity sufficient to change the air in a room in the time stated.

Shops	3 to 6 minutes.
Kitchens	5 to 8 minutes.
Restaurants	10 to 12 minutes.

In using these figures as a basis for figuring required capacities of ventilating apparatus, the equipment chosen should have a capacity 50% or more in excess of the calculated requirement, if ventilation is to be insured under unfavorable conditions. In connection with

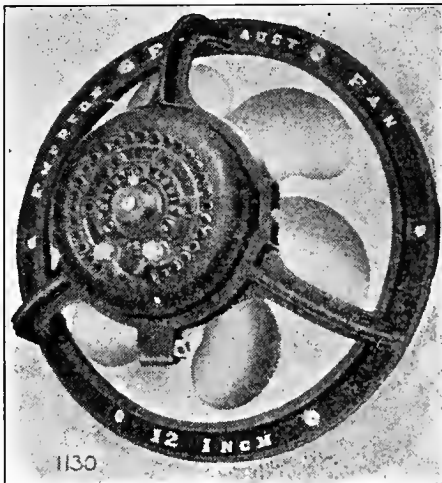


Pressure creosoted timber culverts on the Southern Pacific Railway are free from decay after 25 years' service.

these calculations the capacities of the ventilating apparatus offered by a manufacturer may be taken as follows:

12-in. ventilating fan	800 cu. ft.
16-in. ventilating fan	1000 " "
12-in. Parker Exhauster.....	1200 " "
12-in. Davidson Exhauster.....	1500 " "
15-in. Parker Exhauster.....	2000 " "
18-in. Parker	3000 " "
18-in. Davidson	3500 " "
24-in. Davidson	5000 " "

The capacities given above are cubic feet of free air per minute and are necessarily subject to some reduction where the fan is installed to exhaust against wind pressure or to draw air through a duct, however short. Fans of these types should never be installed to deliver air into ducts if it possibly can



A 12-in. Emerson exhaust fan

be avoided, as if a duct is necessary, it will be found much more efficient to pull the air through the duct. It is usually possible to avoid the use of ducts by carefully planning the location of the exhausters.

In figuring on the purchase of ventilating equipment it should be kept in mind that very often the use of two or three fans of the total required capacity will make a better installation and give more satisfactory results than the installation of one large fan, as the small fans provide a better distribution of ventilation and may be independently controlled when conditions do not necessitate the maximum capacity of the equipment.

Efficiency of Lighting System Is Lost If Not Maintained

"Lamp maintenance" is concerned not only with the replacement of old blackened bulbs with new ones, but is also concerned with the consistent removal of all dust and dirt from lamps, reflectors, shades and from anything which retards passing of light rays, keeping the circuit voltage up to par and the cleaning and brightening up of all walls and ceiling surfaces.

Efficient as our modern incandescent lamps may be, they deteriorate in time and will burn out. As soon as the lamp shows signs of loss of incandescence, a new lamp should be installed. This is recognized to be of the utmost importance.

Advantages of Electric Power For Oil Well Pumping

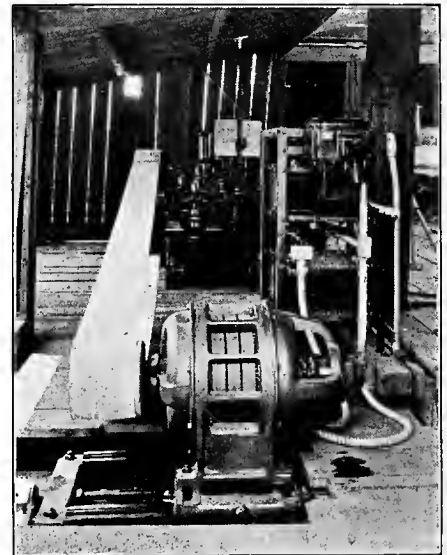
For oil pumping, electric motor drive has a number of special advantages which are summarized in a report of the National Electric Light Association. The oil fuel consumption for steam-engine pumping of individual wells is from 3 to 15 barrels per well per day. This is saved by electrification and thus in fact amounts to an increase in net production. More gas is available for the market where motors replace gas engines.

Elimination or reduction of many avoidable shut-downs in oil well pumping operations can be accomplished by using motors, and production can thus be increased in many cases as much as 15 per cent. Evidence of this is given in Table I.

Experience has demonstrated that the value of motor drive in accomplishing these results lies in the following points: (a) electric troubles do not cause over 2 per cent loss in time due to shut-downs; (b) there are no gas, water or freezing troubles with electric drive; (c) the time lost from rod breakage is usually cut in half when motors are installed; (d) valve and cup troubles are reduced several per cent with motor drive; (e) there are occasionally some other troubles which electric operation remedies to a considerable extent.

By reducing or eliminating many delays, electric drive makes more pumping time available and thus increases the production. In this respect the following are included among the advantages of a motor over a gas or steam drive: (a) no delay from steam lines full of water after an idle half-hour; (b) no time required to get up steam after long idle periods; (c) a motor cannot stick on center; (d) a motor,

unlike a gas engine, will always start without difficulty; (e) a motor does not materially slow down on the heavier "pulling" work and hence pulls the first "stand" of tubing as fast as the last one; (f) the more accurate the control obtained with motors results in quicker work in handling rods and tubing; (g) after drilling is completed, less than an hour is ordinarily necessary to change



Electric pumping installation in the oilfields

to electric pumping when the proper arrangements are made. Production lost at the flush period during the long time required to set a pumping engine is thus nearly all saved.

Production is much reduced by variations in engine speed. The more uniform speed of a motor maintains full output of every well. Actual examples are given in Tables II and III.

TABLE I
Comparison of Pumping Time Lost from Shut-downs with Gas Engine and Electric Drive Under Similar Normal Operating Conditions in Kansas, Pumping on the Beam.

	Gas Engine Drive Augusta Field		Electric Drive El Dorado Field	
	Nov. 1917	Feb. 1918	Oct. 1918	Nov. 1918
No. of wells.....	208	216	26	27
Per cent of available pumping time lost, all causes	23.3	28.2	10.7	9.8
Per cent of available pumping time lost, engine or electric troubles only.....	4.8	8.15	1.98	0.63

TABLE II
Comparative Production with Steam Engine and Electric Drive under Identical Operating Conditions on the Same Well, Pumping by Engine at Night and by Motor in Daytime (Burma Oil Company, Singu Field, Upper Burma, India).

	Aug. 1916		Sept. 1916	
	Bbl.	Per Cent	Bbl.	Per Cent
Oil pumped by motor.....	1,311	42.5	1,310	45.4
Oil pumped by engine.....	1,777	57.5	1,587	54.6
	Hrs.	Per Cent	Hrs.	Per Cent
Total time motor operation.....	271	36.5	270	37.5
Total time engine operation.....	473	63.5	450	62.5
Barrels per hour, motor.....	4.84	.....	4.82	.....
Barrels per hour, engine.....	3.75	.....	3.52	.....
Increase in production due to motor drive.....	.....	28.5	.....	36.0

TABLE III
Increase of Production Obtained with Electric Drive by an Oil Company in the Spindletop Field, Texas, Pumping from "Power."

	Bbl. Total	Bbl. per Day	Bbl. per Day per Well
Eight wells on steam, January and February, 1918.....	9,346	158.4	19.8
Same eight wells, electric power, March and April, 1918.....	10,791	176.9	22.1
Increase (11.6 per cent).....	.....	18.5	2.3

Western Dealer, Jobber and Agent

Business building suggestions for the store—Distribution and warehousing methods—Advertising and sales promotion ideas

Denver Contractor-Dealers Have Unique Code of Ethics

The Denver Association of Electrical Contractors and Dealers have adopted a code of ethics for the guidance of all members engaged in selling electrical appliances, motors and fixtures. The code follows:

1. Members of the Association shall regard themselves as being engaged in a business in which there is a well-defined duty and obligation toward the public, the electrical industry and themselves. The business demands that members use every honorable means to uphold the dignity and honor of this vocation, to exalt its standards and to extend its spirit of usefulness.

2. Members of this Association shall recognize that the cooperative efforts of such an agency as the Electrical Co-operative League will unquestionably benefit the appliance sales business and should have the support of each individual member.

3. Members of this Association should not falsely or maliciously injure directly or indirectly the business reputation, prospects or business of a fellow member.

4. Members of this Association should not attempt to supplant a fellow member after definite steps have been taken by him toward the completion of a sale.

5. Believing that electrical appliances have been so developed today as to have established their value beyond the experimental or introductory stage, and recognizing that all so-called "free trials" in the homes are expensive and entail a wasteful burden of cost on the public, members of this Association should discourage the public from asking for such "free trials" and should adopt such order forms to be signed by prospective customers as will encourage only bona-fide purchasers, to the end that the practice of "free trials" may be discontinued.

6. Members of this Association believe that "price cutting" and discounts under the list or recognized prices are undesirable and should be used only as a last resort to move dead stock, and they should make every effort to prevent any unavoidable special sale from injuring the business of fellow members.

7. Members of this Association disapprove the extension of time payments on appliance sales beyond twelve months; believe that first payments on appliance sales should be as large or larger than subsequent payments; and believe that all time payments should have a carrying charge added to the cash price sufficient to cover interest charges and cost of collections.

8. Members of this Association should adopt uniform price tags with all prices in plain figures.

Northwest League Institutes Salesmanship Course

Need for Well Trained Salesmen in Electrical Industry Met

By Intensive Course in Oregon and Washington

The scarcity of effectively prepared salesmen in the electrical industry has often been commented on. It is one of the most serious problems confronting the dealers. The Northwest Electrical Service League has, since its inception, been attempting to solve this problem and recently has done so by the establishment in the various large cities throughout Oregon and Washington of courses in salesmanship designed especially to meet the demands of the electrical trade.

Conferences disclosed that the course should meet the following conditions:

- It had to be extremely practical, permitting the students to apply immediately every ounce of additional knowledge and skill acquired during their study course.
- It had to be devoted primarily to the art of salesmanship (i. e., skill in actual selling), as against a thorough study of the science of salesmanship.
- It had to be limited to not over twenty lessons to be given during a period of ten weeks, each lesson to be not longer than about one and one-half hours at night.

Dean Stephen I. Miller, Jr., executive manager of the organization, and William A. Russell, efficiency engineer and business service specialist, have outlined a course which is expected to meet almost every requirement and one which is already proving its effective-

ness in the results which are being obtained.

The complete course of twenty lessons is subdivided into two parts; twelve of the lessons are devoted to the art of salesmanship, and eight to discussions by practical electrical sales experts of the following specialty fields: vacuum cleaners; washing machines and dishwashers; ironers, flat irons, and miscellaneous minor appliances; ranges and heating devices; electrical illumination; home wiring; automotive electricity; industrial electrical apparatus. These discussions of individual specialties are not expected to take the place of the specific training each salesman has to receive from his firm, but are intended to give all students a general understanding of the various classes of appliances.

Of the twelve general lessons, two each are devoted to: the salesman, the goods, the buyer, and the sales process; and one each to selling as a service, the sales department, the salesman and his firm, the salesman and the community.

The course has been established in the principal cities in Oregon and Washington and already the dealers are reporting remarkable progress to successfully handle prospective customers. The lectures are outlined in skeleton form and each member of the class keeps a typewritten record which is easy to understand and easy to apply.

STORE ARRANGEMENT



The interior of the store of the Utah Electric and Motor Equipment Company of Salt Lake City, showing the effective means utilized in displaying lighting fixtures in hitherto unused space above the shelves. The individual compartments for each fixture are both neat and attractive. This department is maintained in conjunction with a large contractor-dealer establishment.

The Electrical Dealer and an Electrical Christmas

Some Suggestions as to What a Dealer Can Do in the Way of Window Displays, Sales Methods, and Literature to Obtain His Just Share of the Enormous Christmas Trade

Christmas—that is a word which causes dealers in almost every line of merchandise to make plans for a big selling campaign. Periods of depression, money tightness and other economic causes have little or no effect on the public purse strings when the gift season rolls around. Few merchandisers have the market which presents itself to the electrical dealer. His goods make excellent Christmas gifts. A small portion of the public realizes this, but the vast majority of Christmas shoppers must have their attention called to the practicability of electrical appliances as gifts. If the electrical dealer is to receive his share of the huge volume of business which precedes the holiday season, he must undertake an intensive campaign to get it. Window displays, newspaper advertising campaigns, demonstrations, attractive literature and other sales helps, backed by the determination to realize his share of the profits from the Christmas trade are going to make the electrical dealer forget the period of depression through which he has but recently passed.



The Society for Electrical Development of New York has arranged a complete set of show cards for improving the decorations of a Christmas window. The holiday colors and the powerful message on the cards provide an eloquent sales help. This is but one of a number of attractive series of window decorations which have been provided by the New York organization for the benefit of its members and the electrical trade in general.

Admonitions may or may not be taken to heart, but there are a few gentle reminders, which, if called to the attention of the electrical dealer early enough, may aid him in taking advantage of the large volume of holiday business. Start early. People are going to buy somewhere. For years they have been impressed with the idea of doing their Christmas shopping early. "The early bird gets the worm" may be a trite proverb but it is highly applicable in this case. The merchant who begins his Christmas campaign early will sell more than his next door neighbor who did not start until a week later. Sell hard. An electrical dealer cannot expect people to buy his goods in preference to neckties, stationery, and the other stereotyped Christmas knick knacks unless he sells them the idea of buying useful, durable, appropriate electrical gifts. Last, sell wisely. Sell the best goods you can buy. It will be building for the future. Get out the old selling ideas and look for new ones, but above all concentrate on the "Electrical Christmas" idea from now until December 24.

ATTRACTIVE window displays are one of the greatest sales helps accorded the electrical dealer. Large manufacturers, big jobbing houses, and the various electrical organizations all prepare sample windows as suggestions of what may be done with electrical appliances. Dealers themselves use their own originality in preparing displays.

It is an admitted fact that motion in a window will draw attention to its contents more readily than a perfectly dead display, no matter how attractive the latter might be. Does the electrical dealer realize that he has at his command a line of merchandise which comprises motion with one of the primary Christmas gifts, namely toys? The electric train will attract children and grownups alike. With interest aroused is it not plausible that a passerby will enter the store, if for nothing more than to make inquiries? Once inside it is the work of the salesman to make the sale. Fathers and mothers will make sacrifices to provide toys for the children. Electric trains, electric toy ranges, small motors and radio equipment may not only be used to arouse interest, but the dealer who makes an effort to merchandise these articles will find that at the end of the Christmas season he has realized a neat profit from such articles.

Literature, when mailing lists are available, is another sales help that cannot be overlooked. Letters that sell and attractive booklets can be used to excellent advantage. The following letter brought

returns to A. W. Gonnerman's Electrical Appliance Shop in Los Angeles:

"Dear Madam:

"With the approach of the holidays, comes the difficult task of selecting appropriate Christmas gifts for relatives and friends. What can be more useful and give more genuine satisfaction every day of the year than an electrical gift?

"The enclosed folders, which illustrate some of the more practical electrical appliances, will suggest to you gifts that will please and give entire satisfaction.

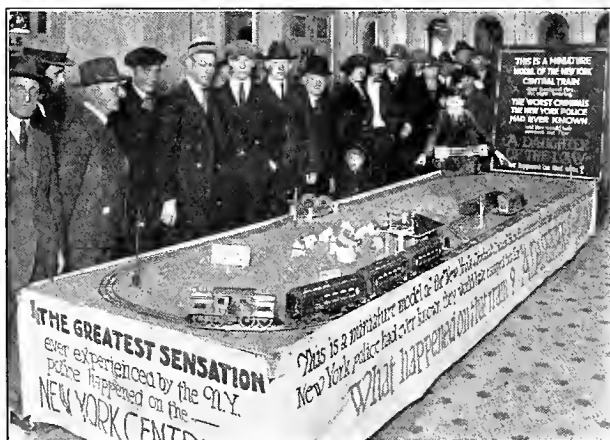
"When doing your Christmas shopping, we shall be glad to have you call at our store and let us demonstrate to you the electrical appliances in which you are especially interested. In case you wish to send us your order by telephone or by mail, we shall give it our prompt and careful attention.

"Thanking you for past patronage and assuring you of our desire to serve you further, we are

"Very truly yours,

"THE ELECTRICAL APPLIANCE SHOP."

With this personal letter went a neatly printed folder in holiday colors which contained lists of appropriate gifts for every member of the family. This folder took the place of a number of pieces of manufacturers' literature and proved a boon to late or bewildered shoppers.



An electric train placed in front of a theater in San Francisco to aid in advertising a picture drew record crowds and greatly increased the box office receipts. Such a train in a show window should correspondingly attract crowds and increase the sales of a store of any kind.

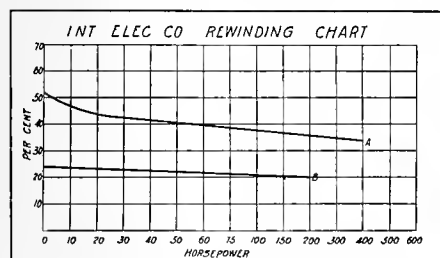


A sample window for displaying an attractive arrangement of electrical appliances, which was prepared for the holiday season by the Society for Electrical Development of New York. The window cards carry a vital message to the prospective customer in emphasizing the electrical Christmas idea.

Charts Quickly Determine Cost of Motor Repairs

After keeping accurate cost records on all repair work in the shop over a period of four years, the International Electric Company of Los Angeles, through a system of plotted curves, has arrived at a scale of charges for repair work based on the horsepower of the motors and a certain per cent of the value of the motors when new.

By referring to the curves, any employe or motor customer can immediately determine what the repair costs on any motor will be. These records avoid any doubt in the mind of the customer as to the correctness of the charges for the repair work and allows him to make up his mind in advance



Curves compiled by the International Electric Company of Los Angeles to determine the cost of repairs to motors based upon the first cost and the horsepower of the machine. Curve "A" is for alternating current motors, while curve "B" is for direct current motors.

whether the repairs are worth while. The charges are based upon a certain percentage of the original cost of the motor so that it is easy to determine whether the condition of the motor justifies the repairs. Should the repair bill be fifty or sixty per cent of this first cost, the customer might be shown where it would be cheaper in the end to purchase a new motor.

The results from the use of these charts after several months' trial seem to prove that the system is highly effective.

The accompanying chart applies to the rewinding of motors. Curve "A" is applicable to repairs on alternating current stator windings while curve "B" applies to repairs on direct current armature windings.

Suggestions have been made regarding electrical gifts for "Mother," for "Little Sister," for "Little Brother," for "Big Sister" and for "Big Brother" but very few for "Father." An iron, a toaster or a range for "Mother," a toy range for "Little Sister," an electric train or radio outfit for "Little Brother," an electric curling iron for "Big Sister" and a light for "Big Brother's" shaving mirror, all have been proposed. Is it to be assumed that father will be given the bill for all of these gifts and thereby be sufficiently electrified?

The Journal of Electricity and Western Industry will welcome suggestions from electrical manufacturers, jobbers and dealers as to what the industry can do to avail itself of the Christmas trade and put over the Electrical Christmas idea. Pictures of window displays, samples of literature and suggested sales helps sent in by the industry will be used in these columns.



Demonstrating a waffle iron in the store of the Hartwell Electric Company, Santa Barbara, Cal.

Demonstrating Appliances to Increase Xmas Sales

Striking while the waffle iron is hot is becoming a popular practice among the dealers of southwestern California. Half a dozen demonstrations in the city of Los Angeles are being given with a view of stimulating the holiday trade in this line of appliance. Newspaper advertising and intensive follow-up cam-

paigns are combining to hold the public on the idea of giving electric appliances for Christmas. In the Hartwell Electric Company's store in Santa Barbara, a capable demonstrator was secured who furnished delectable waffles to every visitor in the store, at the same time enlarging on the advantage in cleanliness and convenience of the electric waffle iron over the gas operated type of iron.

Catching Prospective Customers from the Sidewalk

What Some Western Dealers Have Done to Secure Trade by Means of Interest Arousing Devices Outside the Store

By CHARLES A. GODDARD
Los Angeles

One can easily estimate that out of the hundreds who pass a store every day there are many who might be interested in electrical labor-saving devices if they could be reached. They may not be interested through newspaper advertising; they may not be on mailing lists—but if caught as they go by they are interested right at the place where a demonstration is convenient.

Schlueter's in Oakland, Cal., have a very clever plan to interest people. Using an ex-barber shop, this firm has made a special showroom for vacuum sweepers. The room is fitted with mirrors from the former arrangement and it is easy to walk into a display from the street.

H. L. Dodge, Long Beach, Cal., has had considerable success with motors for sewing machines. In front of his store at all times there is an old machine which has all of the appearance of a second-hand machine. People are always on the lookout, it seems, for second-hand equipment and they walk up to this machine to read what the card on it says. The card refers to a pedal:

"STEP ON THE PEDAL to see the motor run this sewing machine."

Out of curiosity, they do this. They are pleased by the manner in which the machine runs. They step into the shop

to ask about the machine; and they are advised that the sun and weather have made the machine appear to be older than it is and are shown new models and given a talk about the labor a motor saves. After getting the woman to sit down and learn how to operate a motor it is hard for her to get along without one. At any rate, the store has another prospect to follow up.

Keith-O'Brien, Salt Lake City, found that by doing a demonstration washing that consisted of soiled bank notes the attention of many people was caught. When they watched the work in the window they were advised that the machine that would not injure bank notes would be safe for dainty garments, and they got a sales message that was worth the effort.

Holland's electric shop, North Broadway, Los Angeles, is located on the corner. At the corner the store arranged the figure of a washerwoman bending up and down over an old-fashioned wash tub. A big sign announced to those drawn by the display that the tub would be for sale as she had purchased one of the electric washers which the store was showing and she was through with hard work. Attired in bright calico dress and sunbonnet, the figure as it moved up and down over the washboard, was the means of attracting hundreds of people.

Activities of the West

A Business Man's Department Devoted to Events and Developments in Western Industrial Centers — Including News of Interest to Readers in Public Utility, Industrial and Trade Fields

Oriental Contracts Secured

San Francisco Engineers Win Awards For Projects in Japan and China

Two San Francisco engineering firms have been awarded contracts for electrical projects in the Orient during the past two weeks. They are the firm of Thebo, Starr and Anderson, who will undertake the construction of a hydroelectric plant in Japan and the firm of Beckman and Linden, who have a contract for work in Harbin, Manchuria.

To the firm of Thebo, Starr and Anderson goes the honor of being the first engineers on the Pacific Coast to have obtained a contract for a large Nipponese project. They will build a power plant 250 miles south of Yokohama for the Daido Denryoku of Tokyo, one of the largest Japanese power companies. It is estimated that material aggregating millions of dollars will be purchased in America for this plant. Much of it will be purchased on the Pacific Coast and all shipments will be made from San Francisco to Kobe. F. M. Thebo will be in direct charge of the project, and has left for Japan with a corps of engineers.

Beckman and Linden have secured the contract for the construction of a steam power plant and electric railway system in Harbin, Manchuria, which will cost approximately \$3,000,000. This is the first contract in Manchuria ever secured by an American firm and in this case the competition was very keen between German, English and American firms. The award was secured through M. H. Bunting, Far Eastern representative for the Baldwin Locomotive Works.

The system is being installed by a Chinese syndicate which has secured an exclusive franchise for the district, which includes a population of 800,000 people.

The work will be in charge of E. W. Beardslee, formerly an engineer with the Great Western Power Company and a well known figure in Pacific Coast engineering circles. All purchases will be made through the San Francisco offices of Beckman and Linden.

The practice of converting skimmed milk into the whole product for condensation by the addition of eight per cent of cocoanut fat has been condemned by farmers and dairymen throughout the country, according to A. W. Milburn, president of the Borden Evaporated Milk Company, following a recent survey. This practice has been followed throughout the Northwest and has resulted in the utilization of great quantities of skimmed milk otherwise lost. The product is advertised as a cooking milk.

Pacific Coast N. E. L. A. Adopts New Name

The Pacific Coast Geographic Division of the N. E. L. A. at its general meeting at Del Monte on November 11, voted to change the name of the organization to the Pacific Coast Electrical Association. Under the terms of a resolution under which a special committee of five will work in drawing up a new constitution, it is specifically set down that the change in name does not constitute a withdrawal from the national body, but that the association shall give its full support to the nation-wide program of the central body and be affiliated with it. Other points to be taken into consideration in drawing up the constitution are a scheme for a more equitable arrangement of dues of jobbers and contractor-dealers, the admitting of municipal plant employees to associate membership and the feasibility of giving equitable consideration to all phases of membership and the electrical industry in eligibility to office in the association.

Merced District Plans Gigantic Irrigation Development

With the purchase of the Crocker-Huffman water system the Merced Irrigation District contemplates the expenditure of \$12,000,000 on one of the most imposing irrigation schemes in California, according to W. D. Warner, manager of the district. The plans call for the construction of a dam 310 ft. high which will impound a total of 282,000 acre-feet of water. The lake which will be formed will necessitate the moving of the famous Yosemite Valley Railroad, nineteen miles from its present right-of-way. A 40,000-hp. power plant will be erected and a total of 100 drainage pumps installed.

Survey Shows Unlimited Water Power in Colorado

Data just announced by the United States Geological Survey shows that a total of 2,468,254 hydroelectric horsepower is being lost in Colorado owing to the failure to utilize the swift streams and natural reservoirs for the generation of electric power. The survey shows that without storage it would be possible to develop 828,000 horsepower continuously and over a million and a half horsepower during the six high water months.

The total developed water power in Colorado at the present time is set at 91,746 of which eighty-four per cent is used in public utility plants, all but one of which are owned by private corporations. Plants devoted to mining and manufacturing use thirteen per cent while the remaining four per cent is used in pumping plants for irrigation. Colorado now has a greater installed horsepower than Utah and New Mexico combined, the survey shows.

League of Southwest to Meet

Plans Are Completed for Discussion of Boulder Canyon Project

Every angle of the proposed Boulder Canyon project on the Colorado River, which vitally affects at least six states, will come up for discussion before the meeting of the League of the Southwest to be held at Riverside, California, on December 8, 9 and 10. Approximately three thousand organizations in California, Utah, Nevada, Colorado, New Mexico, Texas and Oklahoma are members of the league, and in addition to delegations from each of the member organizations, men of national importance have been invited to attend.

It is expected that President Harding will send a personal representative and tentative acceptances have been received from Secretary of the Interior Fall, Secretary of Commerce Hoover, members of the Federal Power Commission, the governors of six states, army officers, Sir Adam Beck, head of the Hydroelectric Corporation of Ontario, Canada, and many others. Civic and state officials, engineers, power company representatives and irrigation officials are to take part in the meeting, which will consider the development of power from the waters of the Colorado River.

Arnold Kruckman, secretary of the League, is in charge of the preparations for the meet. The League claims to be interested only in the consummation of the project at an early date and has not gone on record as favoring state, national, municipal or private development of the project. This subject will be one of the principal subjects for discussion.

In conjunction with the meeting Secretary Fall has tentatively announced that the government hearings on the Boulder Creek project will be held in San Diego on December first. While this date is not definite, it is believed that these hearings will take place some time before or just after the League sessions.

Axel H. Oxholm, chief of the Lumber Division of the Bureau of Foreign and Domestic Commerce, recently created by Secretary of Commerce Herbert Hoover, recently conferred in Seattle with Puget Sound lumbermen. The new lumber division, according to Mr. Oxholm, is already partly organized, and the department will give all of its time to furthering the interest of the export lumber trade. The purpose of Mr. Oxholm's tour of lumber producing sections was to confer with the lumbermen and to obtain their views on what the new division of lumber can do for lumbermen in helping further the interests of the industry.

Seattle Loses Attempt to Reduce Rates During Off-peak Hours

Proposed legislation which would have reduced the power rates of the city of Seattle lighting department during off-peak hours by twenty or thirty per cent, was killed by the council recently. The bill was originally drafted to provide for a 20 per cent discount from present commercial rates for industrial power, utilized between the hours of 4:30 and 9:30 p.m. The utilities committee of the council recommended that this be amended to 30 per cent. The reduction had been recommended by the lighting department on the ground of having a surplus of current during certain hours of the day, which might be made available for use of factories at a cheaper rate. Opposition to the legislation did not appear until the final vote of the council was taken, when the vote stood 4 against and 3 in favor.

San Joaquin Company Plans to Develop Merced Project

With the acquisition of the holdings of the Mariposa Commercial and Lighting Company and the filing for water rights on the south fork of the Merced River, by the San Joaquin Light and Power Corporation, a new California power project of gigantic proportions is brought to light.

The Merced River development includes the formation of an artificial lake at Wawona near the Yosemite National Park and the construction of four power houses. The reservoir will border the grounds of the famous Wawona Hotel and will be four miles long, one-half mile wide, and will impound four billion cubic feet of water.

Preliminary surveys will be started as soon as a preliminary permit is received from the Power Commission. R. C. Starr, construction engineer of the company, will be in charge of the undertaking.

Los Angeles Gas Company Places Big Order in East

Contracts have been let to a Baltimore firm by the Los Angeles Gas and Electric Company for a 10,000,000 cubic foot container, a one million-foot container and a one million-foot compressor, as the basic equipment for a new unit which is to be added to the present plant of the company in Los Angeles.

Many complaints were made by Los Angeles manufacturers when it was announced that the contracts had gone to an eastern firm and the agitation became so marked that it was taken up by the manufacturers' committee of the Chamber of Commerce. William Baurhyte, vice-president of the company, in defending the action of the company stated that at the present time there are no factories in the South capable of turning out equipment of the size demanded in the new plant. The major portion of the material will be purchased in Los Angeles, he stated.

The gas company is planning additions to the present gas producing facilities which will amount to approximately \$4,000,000 during the coming year.

California Association Starts Industrial Boom Development Organization Inaugurates Membership Drive as Preliminary Move in Progressive Undertaking

Concentrating on a drive to increase the membership by 500 individuals or organizations, the California Development Association is preparing to undertake the greater project of promoting agriculture and developing industry in the state to a point where California will be exceeded by no other state in the Union. Functioning as a state-wide chamber of commerce, the organization proposes to weld the co-operative endeavor in every district to a point where every effort expended in any district will benefit the entire state as a whole. Coordination of work, elimination of sectional feeling, and the inception of a great industrial and agricultural boom are some of the goals which it has set out to attain.

The California Development Association is the only state-wide organization that adequately and completely represents the industrial and agricultural activities of California. The association has a membership of 800 individuals, corporations, chambers of commerce, industrial groups and the larger growers' cooperative groups.

The association conducts its activities in behalf of California's agricultural and industrial development without duplicating the effort of other organizations, because it is the successor in interest of all the organizations that have in past times endeavored to cover this field.

The association now carries on the work formerly done by the following: California State Board of Trade, California Promotion Association, Merchants and Producers Association, Home Industry League, California Industries Association and California Development Board.

The association has accomplished in the past and is planning to do in the future the following:

Answers annually 100,000 inquiries on California.

Gives information to thousands of prospective settlers annually.

Issues 20,000 leaflets monthly on California bank clearings, etc.

Prepares annual California statistical report.

Handles distribution of literature for counties at important state fairs.

Is giving farm colonization problem expert attention.

Holds weekly luncheon meetings devoted to state development problems at the Palace Hotel.

Aids interior counties on financial problems relating to development.

Secures practical results in developing markets for California manufacturers and producers.

Takes action on problems vital to California, such as aiding in almond tariff campaign.

Is constantly active in recognition of California products and elevation of quality standards, both of group and individual members.

Conducts regular lecture courses on California products in schools and women's clubs.

Cooperates with communities and organizations on legislation affecting industries and tariff.

Posters industrial and agricultural exhibits.

General activities at all times directed toward development of cooperative ties between city and country for the benefit of the cities and the mutual advantage and prosperity of both.

Constantly striving for greater population, larger pay rolls, increased prosperity to manufacturer, jobber and retailer, recognizing that the factory pay rolls are the retailer's cash drawer.

Association activities at all times directed and supervised by committees composed of representative California citizens.

At a meeting at the Palace Hotel in San Francisco at which the future activities of the organization were outlined and a program discussed, some of the outstanding men of the state spoke as follows:

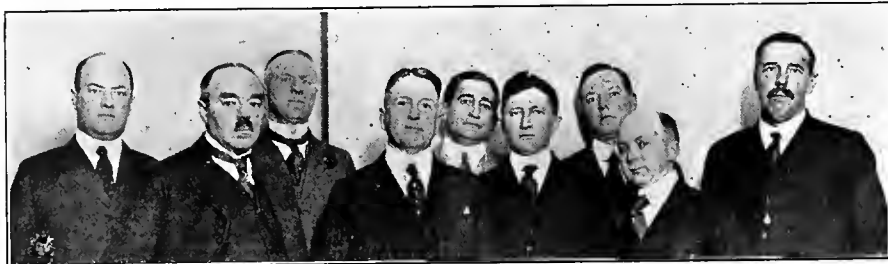
"If we are to sell the products of California to the world we must first know about them ourselves. What we are trying to do for California is what your highest aspirations for a State Chamber of Commerce should be."—James H. McDonough, Pres. Mutual Biscuit Co.

"Our work is to coordinate these activities of this organization. The crowds are going to come to the state of California in the next ten years just as they were headed this way until the war interfered. Our job is to see that when they get here they are placed right, fixed in a place so that they are producing a profit to themselves rather than that they become a charge until they become settled and producing for themselves. Let us see that when they come they immediately add to the wealth of the community. The two major organizations commanding your support are your local Chamber of Commerce and the California Development Association."—A. B. C. Dohrmann, President, Nathan, Dohrmann & Co.

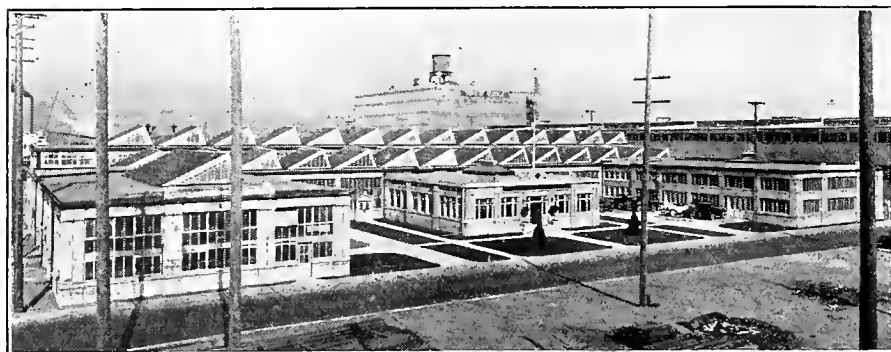
"Cooperation is the highest ideal that can exist in human affairs because it is founded upon the conception of the common good. The California Development Association appeals to me because it is founded upon that ideal of co-operation in the common interest."—Wigginton E. Creed, President, Pacific Gas and Electric Company.

"The growth of our city depends on the development of the country around it. The San Joaquin Valley can support 5,000,000 people without being overcrowded—millions of acres are yet to be developed."—Al C. Joy, Publicity Director, California Associated Raisin Co.

"No city can become great unless it is ready to render a service to its community. No organization can become great unless it is ready to render a service—to the extent that service is rendered will be the extent its influence is felt. San Francisco is destined to be the depot through which will pass the products of the world. Our relation with the United States and foreign countries is centered in San Francisco and the development of the Pacific area. It is for us to assume our responsibilities, recognize our possibilities and go forward to a great future."—R. B. Hale, Hale Bros., Inc.



Leaders in the California Development Association left to right: Judge George E. Crothers, finance committee; A. B. C. Dohrmann, director; Frederick J. Koster, director; Richard D. Quinlan, vice-president; Charles W. Helser, vice-president; Frank M. Davidson, director; E. W. Clapp, director; James H. McDonough, president; John P. Cleese, director.



The plant of the Kilbourne and Clark Manufacturing Company which has been purchased by the Westinghouse Electric & Manufacturing Company as a branch assembling and manufacturing headquarters for the Northwest District.

Westinghouse Company Purchase Seattle Manufacturing Plant

The Westinghouse Electric and Manufacturing Company, Seattle branch, recently concluded negotiations for the purchase of the manufacturing plant of the Kilbourne and Clark Manufacturing Company, Spokane Avenue and East Marginal Way, Seattle. The consideration was \$130,000. Acquisition of this property will provide facilities for assembling and testing electrical machinery, the manufacture of switchboards and panels, and the warehousing of the Westinghouse products. It is also planned to establish the sales organization of the company in this new location.

The purchase is the result of a visit to the Pacific Coast in the latter part of 1920 of H. B. Davis, vice-president in charge of operations, and W. K. Dunlap, acting vice-president of the Westinghouse interests. These men, after a careful study of conditions, decided to establish an assembling shop in

Seattle, permitting the company to ship quantities of unassembled apparatus to Seattle, where it can be assembled, tested and applied to orders. This practice will eliminate delays in shipment and contribute toward better service for the Coast cities.

The Kilbourne and Clark Manufacturing Company at present is being operated under creditors' management, with H. F. Jefferson in charge. The present plant, which has been taken over by the Westinghouse Company, was established in 1918.

During the war, the Kilbourne & Clark Company established an enviable reputation in the manufacture, distribution and maintenance of radio sets for the U. S. Shipping Board and the Emergency Fleet Corporation. Since the war, the company has continued the manufacture of radio sets, amplifiers, high voltage sets, generators, amateur radio equipment, and a general line of electrical supplies. The company was established in Seattle about 1900, maintaining factory and offices at First Avenue South.

Airplane Movie to Boost Stock Sales of Portland Company

Arrangements have been made by the Northwestern Electric Company of Portland, with an airplane company to make a series of flights in the mountains and along the White Salmon river in the vicinity of its hydroelectric plant on that river in Washington, with a motion picture operator who will take pictures showing the mountainous country, the turbulent stream that supplies water to the plant and glimpses of the plant itself, which supplies light and power to the many consumers of the company in Portland. It is the plan to exhibit the pictures in a local moving picture theater to stimulate interest and sales of the company's preferred stock now being offered to the people of this community.

Under the auspices of the Northwest Electrical Service League, the electrical industry of the Yakima Valley is planning an electrical exposition to be held about December 1, in Yakima, at which time a comprehensive exhibit will be held of industrial and commercial electrical equipment, scientific apparatus and domestic appliances. The Commercial, Rotary and Kiwanis Clubs are supporting the movement.

Alaska Paper Mills Get License From Power Commission

A license has been issued to the Alaska-American Paper Corporation by the Federal Power Commission for a hydroelectric development at Orchard Lake, Revillagigedo Island, Alaska. The installation of 5,200-horsepower hydraulic turbines is contemplated, the power to be used in the operation of a pulp and paper mill located at the head of Shrimp Bay. The elevation of Orchard Lake will be raised 32 ft. by a rock-fill dam at its outlet from which water will be conducted through a wood-pipe conduit 2,000 ft. to the power house. All pulp-wood grinding machines will be directly connected to hydraulic turbines, and all other machinery and appliances in the mill will be electric-power driven.

The municipality of West Vancouver, B. C., has voted \$150,000 for the installation of a municipally owned hydroelectric plant to supply the 2500 homes in the district. The section is adjacent to Vancouver but is largely populated by summer residents. The British Columbia Electric Railway Company has declined to extend its power lines into the section on the grounds that the business is not profitable.

World Record Substation Being Constructed by P. G. & E.

The first substation in the world to be constructed for 220,000-volt operation is being built by the Pacific Gas and Electric Company on a ninety-acre tract fronting the state highway between Vacaville and Sacramento, California. The station will be one connecting link in the great transmission system which will bring the power from the company's plants on the Pit River to the cities around San Francisco Bay.

It will be known as the Vaca substation and will be the terminal of the 220,000-volt lines. From there the power will be transmitted at 110,000 volts to the cities where it will be utilized.

The building is to be of steel and reinforced concrete, with Spanish tile roofing and an outside finish of light buff plaster. It will be of imposing appearance and of the most modern architectural design, containing the best equipment that modern science can afford. The main transformers, high-tension oil switches, high-tension air switches and high-tension buses will be installed outdoors. This equipment will comprise seven 16,667-kva. single-phase, oil-insulated, water-cooled autotransformers, 220,000-volt high tension to 100,000-volt low tension.

There will be eight cottages for accommodating the operators, a large garage and a separate building housing the pumping plant for cooling water and domestic uses.

An artistic cooling pond with fountain will be located immediately in front of the building, giving a very pleasing appearance to the substation setting.

It will be the largest and most important substation on the Pacific Gas and Electric Company's system, and one of the largest substations in the world.

A model camp for 100 men engaged in constructing the station has been built. This camp is of a semi-permanent nature, made up of frame buildings of surfaced lumber and painted, with a view of leaving it available for enlarging the substation in another five years.

Captain Robert Dollar States That Trade Is Better

Captain Robert Dollar, dean of Pacific Coast shipping men and an outstanding figure in the world of foreign trade, is at his home in San Francisco again, after a business trip around the world during which he traveled approximately 30,000 miles. Captain Dollar, who is recognized both abroad and in America as one of the foremost trade and commercial experts, comments on trade and business conditions as follows:

"The bottom has very nearly been reached. I don't think it will get worse. All countries are overstocked, but there is getting to be a shortage in certain commodities that looks promising, for it spells demand.

"I differ from some in believing that there is going to be no spurt upward, but a slow, steady improvement. But we in the United States have certain distressing obstacles to overcome. In Peking not long ago China called for bids on 240 cars. There were seven American bids. The lowest was \$2,000,000. The British bid was \$1,300,000. The Belgian bid was \$1,100,000. That is distressing from our point of view, but I have unbounded confidence in the future and I know we shall pull out somehow."

Idaho Mining Activities Cause Increased Power Demand

Developments in the mines of Wood River valley in Blaine county, Idaho, during the past sixty days have been such as to cause the Wood River Power Company to extend its lines from Richfield to Shoshone to connect with the lines of the Idaho Power Company in order to supply the power necessary to continue mining operations. The two hydroelectric plants of the Wood River company have been sufficient to furnish the needed power but the discovery of new ore bodies has brought a rush of men to the valley and caused the existing companies to begin operations on a large scale.

The Federal Mining and Smelting Corporation has purchased the holdings of the old Baltimore company adjacent to the famous Independence mine and is sending out quantities of ore. The Bunker Hill and Sullivan Mining and Concentration Company has been conducting operations on a large scale for two months and is negotiating to purchase the property of two companies in the same locality. The Mascot mine, recently organized, has installed a 50-horsepower hydroelectric plant and is making other improvements while the United mines in the Muldoon district have also reopened. Gold and silver are the chief metals in the district.

Fire Destroys Weaver Roofing Plant in Los Angeles

The plant of the Weaver Roofing Company, owned by Sylvester L. Weaver, president of the Los Angeles Chamber of Commerce, was totally destroyed by fire recently with a loss of approximately \$100,000. Due to the combustible nature of the material in the plant the Los Angeles fire department was unable to combat the flames. According to Mr. Weaver, arrangements have been made to continue the business of the company until the plant can be rebuilt and the stocks replaced. The spectacular rescue of several cars of gasoline from the path of the fire was all that saved the plant of the Richfield Oil Company from being destroyed also. The Santa Fe Railroad has highly commended the men who performed the feat.

Will Build Transmission Line to Wenatchee Properties

The Puget Sound Power and Light Company recently closed a contract with the Washington Coast Utilities of Seattle, which concern recently purchased the properties of the Wenatchee Valley Gas & Electric Company, to supply the Wenatchee district with electric power for a period of 35 years. According to present plans, construction of a 110,000-volt transmission line to link up north central Washington with Seattle and Puget Sound territory, will be undertaken. The line will be started early in the spring and completed by July 1, 1922. The Washington Coast Utilities, in taking over the properties of the Wenatchee Valley company, secured the holdings of the Wenatchee company covering the Cashmere Valley.

Reductions in Building Materials Presage Boom

San Francisco Industrial Association Announces Price Cuts which Are Expected to Materially Increase Construction

Following a series of conferences between large material dealers and the San Francisco Industrial Association, reductions in almost every line of building material have been announced, which, it is believed, will materially increase construction in the near future. In a statement issued in conjunction with the announced reduction, the association sets forth that several large buildings have been proposed and plans and specifications prepared, which are merely being held up on account of the high prices asked for basic materials.

It is expected that within the next few months, a building boom will be instituted in San Francisco which will break all records and approximate the construction program which has been under way in Los Angeles for the past two months.

The reductions on some of the principal materials follow:

Lime—The price of lime is cut 60 cents per barrel of 180 pounds, effective as of October 1.

Face Brick—A reduction of \$5 per 1000 has been made in the price of both classes of face brick, effective as of October 1.

Hollow Tile—Four-inch hollow tile is now offered at \$108 per 1000, a reduction of \$59.50 and 6-inch tile at \$156 per 1000, a reduction of \$69.

Fire Brick—A reduction of \$5 per 1000, effective as of October 1.

Roofing Tile—The type used chiefly in San Francisco buildings has been reduced to \$21 per square, which leaves the price at 50 per cent over 1914.

Sewer Pipe, Flue Linings and Chimney Linings—A reduction of 5 per cent, effective October 1. The present price is \$.617, which is 69 per cent above 1914.

Common Brick—A reduction of \$1 per 1000, effective as of October 1. The present price of brick is \$15.50 per 1000.

Lumber—The association's analysis of lumber prices shows that on random cargo lots of merchantable fir, the present price is approximately 53 per cent more than the price in 1914, with the retail price approximately 41 per cent more than 1914 figures. This class of lumber represents ordinarily from 80 per cent to 85 per cent of the soft wood lumber that is shipped into San Francisco.

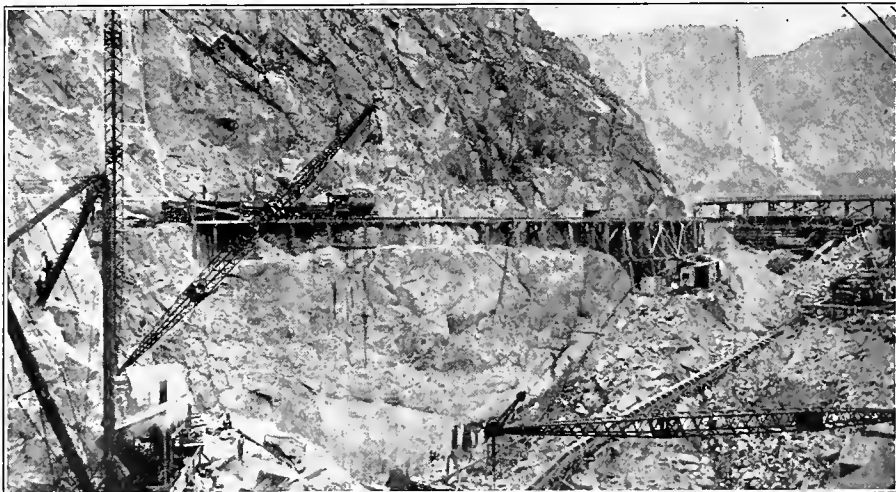
Northwest League Institutes New Series of Round Table Talks

Sponsored by the Northwest Electrical Service League, a group discussion method of studying three of the principal problems before them has been inaugurated by the electrical contractor-dealers of the Pacific Northwest. These three problems are: advertising, merchandising, costs and accounts. Round-table discussions of advertising were held in October in Seattle, Spokane, Tacoma, Bellingham, Everett, Portland, Astoria, Albany, Marshfield, Medford, Hood River and other cities, at which meetings short talks were given by advertising experts on the various phases of newspaper advertising, window dressing and other forms of advertising, followed by informal discussions on the part of the electrical men.

Following the "round table" meetings on "advertising," similar meetings on the subjects of "merchandising" and

later on "costs and accounts" will be arranged, at which time experts on these subjects will lead the discussions, and definite problems will be brought up. Dean Stephen I. Miller, Jr., College of Administration of the University of Washington and manager-secretary of the Northwest Electrical Service League, is a keen student of advertising, merchandising problems, and cost-accounting, and is responsible for the campaigns.

Because of a considerably increased demand for flour, which exceeded the capacity of the Ogden mill, the Holley Milling Company has resumed operations at their Salt Lake City plant. The initial daily capacity will be 500 barrels, which will be gradually increased. During the period of its idleness the mill has been renovated and the plant altered so as to make it one of the most efficient in the state. Electric power is used.

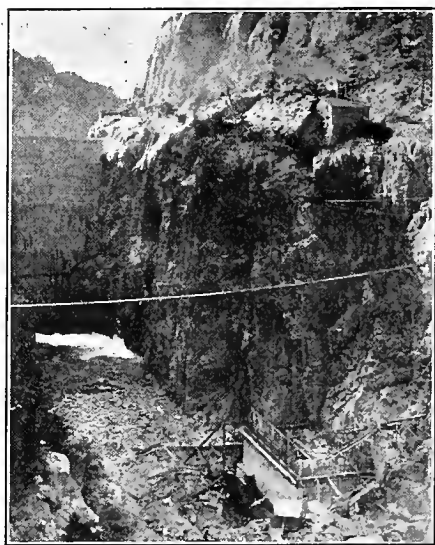


Few people realize the progress which is being made on San Francisco's \$40,000,000 Hetch Hetchy project. The illustration shows the downstream face of the diversion dam and the excavations for the initial dam together with its outline on the rock walls of the canyon. The electric hoisting crane is shown dumping rock into the railroad for hauling away. In the background is Tueculala and Wampa falls.

Wyoming to Have New Plant

Power Project in Connection with the Shoshone Dam Ready January 1

Four Wyoming cities will be supplied with an abundance of electric power shortly after the first of the new year following the completion of the power house which is being erected immediately below the Shoshone dam near Powell, Wyoming, by the United States



The Shoshone Dam near Powell, Wyoming, together with the partially completed power plant in the bottom of the canyon which is being erected by the U. S. Reclamation Service.

Reclamation Service. The irrigation project which includes approximately 150,000 acres, has been open for settlement since 1908. The towns which will be supplied with power by a transmission line fifty miles long, are Powell, Cody, Garland and Deaver. Power will also be supplied for the construction of the Willwood Dam and additional canals.

The equipment of the Shoshone plant will include two 1100-hp. Wellman-Seaver-Morgan turbines, direct connected to two General Electric generators. At a later date it is planned to install a third unit with a capacity of 3200 hp.

The excavation for the power tunnel has been completed and partially lined with concrete. The excavations for the power house are finished, the foundations poured and work progressing on the draft tubes and building walls. Practically all material and equipment has been received.

The power house is located in the canyon bottom five hundred feet below the dam proper. J. S. Longwell is manager of the project.

Construction Records in Denver Show Marked Increase

According to the report of Frank M. Ladd, chief building inspector of the city of Denver, the year 1921 will show an enormous increase in the amount of construction over that of last year.

Five hundred and eighty-seven permits, amounting to \$1,033,700, have been granted in the past month, compared to 338, totaling \$366,250, in the corresponding month of 1920, an in-

crease of 239 permits and \$667,450. In the ten months of 1920, up to November 1, 3,082 permits, amounting to \$6,709,960, were issued. Up to the present time there have been 4,863 permits, for \$8,442,225 issued this year; an increase of 1,781 permits, amounting to \$1,732,265.

There is every indication the year's total will run over ten million dollars, the largest in many years and one of the largest in the history of the city.

An interesting sidelight on the situation is that ninety-eight brick and concrete residences have been completed in the last month, at a cost of \$478,500, and 70 more with a value of \$114,900 are in the process of construction.

City statistics show that there are over 60,000 homes within the municipal limits of Denver. Of this number 38.3% are owned by their occupants, and according to the contract department of The Denver Gas and Electric Light Company electric service connections have been made to over 80% of these homes. The activities of that department have so increased through the unusual rush for service connections that the force has nearly been doubled since January, 1921.

The McGraw Hill Company of New York has announced the twelfth addition to its list of magazines in "Bus Transportation," which will be published for the first time on January first, 1922. The magazine has been conceived as the result of the growing popularity of motor transportation.

Meeting at the famous "Ye Bull Penn Inn" on the evening of October 25th, the Los Angeles Section of the American Institute of Electrical Engineers initiated the first Round Table discussion in behalf of an Engineering and Industry Building for Los Angeles. The guest of honor of the evening was Robert Sibley, vice-president of the Institute, who had spoken to them on the present promising industrial and engineering activities in the West.

Portland's controversy with the Emergency Fleet Corporation over the operation of vessels to the Orient has been definitely settled. Under a recent ruling the Columbia Pacific Shipping Company, a Portland owned line, is given the exclusive right to operate vessels of the United States Shipping Board to points in North China with the proviso that the service may be extended to South China ports in the near future provided it can be shown that the amount of trade will warrant the extension.

Power Survey Shows Record Developments in Japan

The development of the electrical industry in Japan during recent years is shown in a survey recently completed by the Department of Communications of the Japanese government. There are at present a total of 848 electric power and railway companies operating in the Nipponese empire, representing an invested capital of \$39,000,000. The daily consumption of power for all purposes is set at 1,405,325 kilowatts. Of this amount, seventy-five per cent is generated in hydroelectric plants.

Books and Bulletins

Gasoline Automobiles

By JAMES A. MOYER. Cloth, 5 x 7 1/2. 260 pages, 212 illustrations. Published by McGraw Hill Book Company, Inc., New York

This book is primarily designed as a handbook on the construction, theory and operation of automobiles for beginners. It presents briefly and clearly the essential principles of automobile construction and operation and in addition furnishes a practical help to drivers in making repairs of ordinary operating troubles. It is so simply written that a beginner can understand nearly every section. The many excellent illustrations aid in clarifying the discussion. The chapters include automobile types and parts, automobile engines, gasoline and substitutes, gasoline carburetors, automobile ignition, magnetos and ignition testing, electric starters, clutches, transmissions and differentials, lubrication and cooling systems, and automobile troubles and noises.

The Bureau of Mines, Department of the Interior, has issued Bulletin No. 206, "Petroleum Laws of All America," by J. W. Thompson. The book contains 448 pages and clearly sets forth every angle of the petroleum laws, not only in the United States but also in other North American countries.

The Allis-Chalmers Manufacturing Company have issued Bulletin No. 1118 descriptive of their new line of continuous polyphase induction motors. The bulletin covers type "AR" squirrel cage line, which is now on the market, and the new type "R" potential starters.

California Oil Workers Strike Ends in Settlement

The strike of the oil workers in the Kern River fields in California, which for months tied up all drilling operations and at times threatened to develop into a miniature rebellion, has been settled. The workers were attempting to get federal backing for the agreement which the employers offered them. They failed to gain their point and were forced to accept the terms without the stamp of approval of the national government. Many of the men have returned to work and it is expected that production from this section of the state will return to normal in a short time.

Consolidation of three Japanese power companies during the past month into one concern has resulted in the formation of the largest power corporation in the Orient with a capital of 219,750,000 yen or approximately \$100,000,000. The amalgamation brought together the properties of the Tokyo Electric Company, the Takasaki Electric Company and Katsuragawa Electric Power Company, all to go under the name of the first mentioned concern. Improvements to the properties of this and other concerns will bring the available power supply of Tokyo up to approximately 250,000 kw.

Meetings of Interest to Western Men

Form Electric Transportation Association in S. F.

The Electric Transportation Association, organized for the purpose of promoting interest in improved material handling and transportation equipment, has been formed in San Francisco by men representing electric storage battery transportation equipment manufacturers and associated lines in the San Francisco bay region.

The membership at the present time includes twenty-five men drawn from the following companies, and will be increased in the near future: Great Western Power Co., Pacific Gas and Electric Co., Walker Vehicle Company, Ward Truck Sales Co., Qneida Electric Truck Co., Westinghouse Electric and Manufacturing Co., Automatic Transportation Co., Baker R. and L. Co., Cowan Truck Co., Detroit Electric, Ellwell Parker Co., Lakewood Engineering Co., Edison Storage Battery Co., Electric Storage Battery Co., Gould Storage Battery Co., Philadelphia Storage Battery Co., Gunn, Carle Co.

The following officers were elected to serve for the ensuing year: I. G. Perin, president; M. B. Rider, vice-president; C. P. Hering, secretary-treasurer; H. S. Furlong, assistant secretary-treasurer.

Regular meetings will be held on the first day of each month. Arrangements have been made for a meeting to be held at the Engineers' Club, San Francisco, on November 18, when motion pictures of the latest improved methods of material handling, both in this country and in Europe, will be shown. Invitations to attend this meeting have been extended to anyone interested in the subject.

San Francisco League Opens Power Securities Drive

A power securities drive in which the San Francisco Electrical Development League is aiding in the spread of the customer ownership idea for public utility companies was instituted at a recent meeting of the League at which John A. Britton, vice-president of the Pacific Gas and Electric Company, and H. F. Jackson, general manager of the Great Western Power Company, were the principal speakers.

The drive will last over a period of two weeks and is different from those in the past in that no districts have been assigned to committee members but each is allowed to press the campaign in any field that he desires. The drive was inaugurated at a special "Ladies' Day" meeting of the League.

Fuel conservation formed the basis for discussion at the November meeting of the San Francisco Section, A. S. M. E., when A. N. Clark, chief of the fuel bureau of the Southern Pacific Railroad, spoke on this subject. Motion pictures showing how oil is produced and how it can be conserved were a feature of the meeting.

Denver League Institutes Many New Electrical Movements

One of the most enthusiastic meetings in the history of the Electrical Cooperative League in Denver was held at the Metropole Hotel in that city the night of November 3rd. With over a hundred representatives of all branches of the electrical industry present, a dinner, accompanied by special musical entertainment, followed by an impromptu program of talks, made up what has been recorded as a "red letter" night for the industry in that part of the Rocky Mountains.

On account of the cooperative advertising campaign just having been launched in Denver, an excellent opportunity was presented for going over the campaign. The fact that the contractor-dealers were represented in the campaign by 95 per cent of their members was complimented by A. C. Cornell, chairman of the publicity committee and manager of the intermountain territory for the Western Electric Company, Inc. The seven electrical jobbers and the central station have joined with the electragists in putting on the campaign for four months' duration, it was reported.

An "Electrical Day" was featured at the weekly meeting of the real estate bureau of the Denver Civic and Commercial Association, November 2, at which time the Denver Electrical Cooperative League had charge of the program. The part electricity is playing in the modern home, the education of the public in things electrical, and cooperation between the real estate interests and the electrical industry was stressed.

T. O. Kennedy, chairman of the League's advisory committee, explained the electrical home movement and showed the realtors where every dollar spent in the electrical equipment of a home added four dollars in value to the selling price of the property.

Nearly a hundred prominent real estate men attended the meeting. Many representatives of the electrical industry were also present and gave support to the message of "doing things electrically."

The Seattle Section, A. I. E. E., will hear an address on "Development Studies Affecting Telephone Plant Design" by W. C. Pickford, division commercial engineer for the Pacific Telephone and Telegraph Company, at its meeting on November 28.

Rocky Mountain N. E. L. A. Plans Educational Campaign

Since the September convention of the Rocky Mountain Division of the National Electric Light Association, definite steps have been taken by that organization to disseminate information concerning public utilities in Colorado, Wyoming and New Mexico.

Several meetings of the committee for public utility information were held in Denver during the month of October upon which occasions there were more than thirty representatives of different electric public utility corporations.

State utility organizations such as the Wyoming Utilities Association, the New Mexico Utilities Association and the Colorado Electric Light, Power and Railway Association are actively engaged in coordinating their support of the new propaganda movement through their respective presidents, E. P. Bacon, Arthur Prager and Fred Norcross.

Offices have been established in the Gas and Electric Building, Denver, where a press bureau will be maintained for the regular issuance of news to the press of the Rocky Mountain region. A speakers' bureau will be maintained and educational work will be carried on in the public schools.

T. O. Kennedy, chairman of the Denver Electrical Cooperative League and president of the Rocky Mountain Division of the N. E. L. A., has been re-elected as head of the committee on information. V. L. Board of the Denver Gas and Electric Light Company is secretary and treasurer.

Edison Redondo Club No. 1 of the Southern California Edison Company, which has always taken the lead in matters of new educational effort in the Southwest in its relationship to the employes of utility companies, inaugurated on the evening of October 26th a new ideal of helpfulness to its members, in the nature of having outside speakers give them addresses on the present status of industry in the West. The initial speaker was Robert Sibley, editor of the Journal of Electricity and Western Industry, who told them of the gigantic power program which is now under way in the West and the part that Edison men have in this development. The Edison Club movement has during the six months of its progress increased in numbers until now this company has something over a dozen clubs in the various communities served by the Southern California Edison Company.

Considerable interest is being manifested in the first electrical show to be held in Yakima, Wash., December 9 and 10 in the Armory, under the auspices of the Northwest Electrical Service League.

COMING EVENTS

LEAGUE OF THE SOUTHWEST

Riverside, Cal.—December 8-10, 1921

GOVERNMENT HEARING ON BOULDER CANYON PROJECT

San Diego, Cal.—December 1, 1921

GROUP MEETING, TECHNICAL SECTION, N. E. L. A.

San Francisco, Cal.—November 14-18, 1921

Dean Stephen I. Miller, Jr., executive manager of the Northwest Electric Service League, brought out a powerful message in his address on "The Irrigation Farmer as a Business Asset" before the annual meeting of the Washington Irrigation Institute at Yakima, Wash., October 27-29. Dr. Elwood C. Mead of the University of California, the father of the California Land Settlement plan, was another nationally known Western man who addressed the meeting.

Mortimer Fleishhacker, president of the Great Western Power Company, has just returned to San Francisco from Washington where he served as a member of President Harding's unemployment conference. In view of his helpful suggestions, Mr. Fleishhacker has been chosen by the President to act as a member of the permanent committee which will continue to study the question.

John McLean, assistant general sales manager of the Standard Oil Company, with offices in Seattle, after a service with the company of more than 37 years, has retired from active business. His retirement was recently announced at a banquet given at the Masonic Club, Seattle, for 500 employees of the company. Mr. McLean started with the Standard Oil Company in Stockton, Cal., in 1884 as district sales manager. He came to Seattle in 1897.

R. D. Quinlan, sales manager of the Sperry Flour Company, has been charged with the duty of directing the efforts of the progress campaign or membership committee of the California Development Association of Agriculture and Industry. This association is planning to increase its membership so that it will be able to fulfil the work of a state-wide chamber of commerce. Mr. Quinlan's keen desire to see the co-



R. D. QUINLAN

operative efforts of the vast state coordinated so that the greatest benefit may be derived from the least effort, makes him especially suited to head the association's drive for more members. In addition to the new position which has just been conferred upon him, Mr. Quinlan is one of the vice-presidents of the Development Association, vice-president of the San Francisco Rotary Club and president of the Sales Managers' Association of San Francisco.

Personals

H. A. Barre, executive engineer for the Southern California Edison Company, recently visited in Salt Lake City where he conferred with Governor Mabey and State Engineer R. E. Caldwell regarding the plans of his company in conjunction with the development of the Colorado River Basin.

N. W. Graham, of Graham-Reynolds Company, Los Angeles, and R. E. Fisher, in charge of the commercial department of the Pacific Gas and Electric Company, have been appointed to the advisory committee of the California Electrical Cooperative Campaign. Both Mr. Graham and Mr. Fisher will be able to contribute materially to the progress of the cooperative idea.

Ralph Cowgill has been appointed engineer for the Medford Irrigation District by the Board of Directors, in view of his familiarity with conditions in the district. Mr. Cowgill several years past held the same position but for the past few years has been devoting his time to the large agricultural interests he has near Medford. He takes the place of R. W. Rea, who has resigned.

John S. Eastwood, consulting hydraulic engineer of San Francisco, has been called to Anyox, British Columbia, by the Granby Consolidated Mining, Smelting and Power Company, to aid them in the selection of a damsite for a new power project they propose to undertake.

A. H. Nicholl, specialty sales manager for the Western Electric Company, with offices in San Francisco, recently returned from a canvass of the entire Pacific Coast in the interests of his company. Mr. Nicholl reports that business conditions throughout the district are greatly improved, and that the outlook for merchandising electrical appliances over the Christmas holidays is exceedingly bright.

W. D. Brookings, well known retired California lumberman, is the head of the natural resources production department of the United States Chamber of Commerce. Mr. Brookings and his associates are preparing a campaign to educate the public on the necessity for conserving the natural resources of the United States.

R. A. Backus, special representative of J. F. Fenwick, secretary and assistant general manager of the Hawaiian Electric Company, Ltd., Honolulu, has returned to Hawaii after a lengthy stay in California studying all angles of the electrical industry here. Mr. Backus, before his return, expressed the conviction that California leads the world in matters electrical. The company which Mr. Backus represents is one of two central stations which are members of the National Electrical Supply Jobbers' Association.

R. C. Short, proprietor of Short's Electric Shop, Sebastopol, Cal., is a recent San Francisco visitor. Mr. Short was in the city on matters connected with his business.

H. H. Jones, general manager of the San Diego Consolidated Gas and Electric Company, has been appointed as one of a board of trustees which will supervise the allocation of new industries and the resale of 1000 acres of land adjoining San Diego harbor. This land was secured through a popular subscription campaign as part of the new movement to bring more industries to the city. San Diego has been conducting a nation-wide campaign in four



H. H. JONES

of the country's largest magazines and thirty newspapers, calling attention to the natural advantages of the city and its phenomenal growth. There has been a large yearly increase in building activity each year since 1917, and 1921 will easily exceed 1917 by 500 per cent. The Gas and Electric Company are doubling the capacity of the generating station to keep up with the demand for electric light and power.

Henry Bostwick, head of the San Francisco division of the Pacific Gas & Electric Company and president of the Pacific Coast Gas Association, has been chosen to head the executive committee for the annual Red Cross Roll Call in San Francisco.

George A. Campbell, general manager of the Reno Gas and Electric Company, is a recent San Francisco visitor. Mr. Campbell states that several important projects are under advisement at the present time for various Nevada cities.

Earl O. Slater, formerly with the Pacific Gas & Electric Company's engineering staff in the gas department and at present on the general engineering staff of the Westinghouse Electric & Manufacturing Company with headquarters in Pittsburgh, is a recent San Francisco visitor.

S. M. Kennedy, vice-president in charge of public relations of the Southern California Edison Company, has returned from the East where he made a profound impression in his appearance before the Stone & Webster managers and department heads who met at Boston during the early part of October. Mr. Kennedy made the trip East as the specially invited guest for this interesting gathering. He spoke upon the subject of "Public Relations," taking his material from his book "Winning the Public," the second edition of which will soon be published.

E. P. Bacon, general manager of the Natrona Power Company of Casper, Wyoming, attended a recent meeting of the advisory committee of the Denver Electrical Cooperative League. Mr. Bacon is a staunch advocate of the co-operative idea and is making a close study of the progress of the Denver organization.

W. W. Smart, superintendent of the Logan plant of the Utah Power and Light Company, has been transferred to the superintendency of the Olmstead plant at Provo. **George T. Taylor**, superintendent of the Wheelon plant at Cache Junction, will assume the duties at the Logan station.

R. R. Beal, engineer in chief for the Federal Telegraph Company of San Francisco, and one of the foremost authorities on radio telegraphy on the Pacific Coast, is in China where he will personally supervise the construction of the great wireless station which is to be erected at Shanghai by the Chinese government. The plant is one of a series of five which the Chinese contemplate erecting.

G. H. Trimble, general manager of the Safety Electric Products Company; **James Addis** of the sales force of Listenwaller & Gough, and **W. C. Campbell** of the Electrical Specialties Company, all of Los Angeles, recently drove up to San Francisco on a business visit both to San Francisco and intermediate points, in the interest of forwarding safety development in the West.

Dr. J. F. Merrill, dean of the college of engineering of the University of Utah and one of the guiding spirits in the electrical development of the West, has contributed an illuminating paper suggestive of railway electrification in the country west of the Rocky Mountains, before the Utah Section of the A. I. E. E. Dean Merrill, who has won national recognition in the engineering profession for his exhaustive research



J. F. MERRILL

along lines vital in the welfare of the electrical industry, visualizes the possibilities of an industrial West when all the rail lines are electrified through the utilization of the unreclaimed hydroelectric resources of the states adjacent to the Pacific Coast. This saving alone in fuel would run into millions of dollars annually, he sets forth in his paper. Dean Merrill's helpful thoughts in the advancement of the West are recognized as invaluable by the leaders of the industry.

James H. McGraw, president of the McGraw-Hill Company, Inc., with headquarters at New York City, has been elected president of the American Business Press Association, an organization comprising practically all of the powerful business papers published in America.

Robert Sibley, editor of the Journal of Electricity and Western Industry, leaves for the East immediately after Thanksgiving Day to spend some time in investigating the hydroelectric situation in Toronto, Canada, and later will attend the annual meeting of the American Society of Mechanical Engineers in New York, returning to his San Francisco office the latter part of December.

F. N. Smith has been added to the California Electrical Cooperative Campaign staff and is to have his headquarters in Los Angeles at 743 Title Insurance Bldg., with A. L. Spring.

F. E. Boyd, manager of the small motors department of the General Electric Company with headquarters in San Francisco, is now visiting various business centers of the East. He expects to return again to San Francisco the second week in December.

John Hays Hammond, noted mining engineer, arrived in San Francisco recently after an extended tour of the Orient. While in the Orient Mr. Hammonds suffered a severe attack of ptomaine poisoning from which he has not fully recovered.

W. C. Winston, president of the Associated Contractors of America and head of the Winston Construction Company of Minneapolis, is touring Pacific Coast cities, to bring to the attention of the communities the necessity of a local organization to facilitate general construction as a means of relieving the unemployment situation.

Allen Spencer of The Denver Gas and Electric Company took a prominent part in the annual American Legion show of Denver, "Name It," which scored a remarkable success at the national convention of the Legion in Kansas City.

O. S. More has withdrawn his company, The Domestic Appliance Company of Denver, from the retail field in order to specialize on sales and service of electric refrigerating machines in conjunction with The Denver Gas and Electric Light Co.

Walter Tripp of the sales department of Hendrie & Bolthoff, one of the largest electrical jobbers in Denver, was the "hit" of the "Shrine Revue" recently staged for an entire week in that city.

Charles Oliver has been appointed chief electrical inspector of the city of Denver to succeed **Bert Cooper**, who has resigned in order that he may enter the contracting business in California.

F. O. Broili, president and engineer of the Nevada Machinery and Electric Company, Reno, Nev., is a recent San Francisco visitor. Mr. Broili states that the town of Carlin, Nev., is preparing plans for the erection of a municipal light plant.

Ward G. Kindy is the new instructor in electrical engineering at Stanford University. Mr. Kindy comes to his position in western educational circles from Ohio State University, where he is listed as a graduate.

W. D. Moriarty, associate professor of business administration at the University of Washington, who is serving during a leave of absence from the university as field man for the Northwest Electrical Service League, is devoting his time to organization work with contractor-dealers and to better merchandising methods throughout the Northwest and particularly in the state



W. D. MORIARTY

of Oregon. Mr. Moriarty is a graduate of the University of Michigan and later developed the courses in business English, advertising and salesmanship there. While his work with the League so far has been largely that of organization, he has prepared a monograph on advertising and has just staged the first Home Electrical demonstration in the Northwest at Astoria, Oregon, with signal success. Because of his merchandising experience the foundation he is laying at this time in the industry, is proving invaluable to the League.

D. P. Mason has been appointed manager of the supplies department of the San Joaquin Light and Power Corporation. In his new position Mr. Mason will have charge of the purchasing department, the transportation department, the stores department and the salvage department.

Hewitt Davenport, president of the Pacific Mill and Timber Company, has just returned to San Francisco after an extended tour of Mexico. Mr. Davenport states that Mexico is simply awaiting American recognition before the dawn of a new financial and commercial era in the country.

Obituary

Howard C. Holmes, civil and consulting engineer of national reputation, builder of the San Francisco ferry building and many of the early cable railways in that city, died recently after a six weeks' illness. Mr. Holmes will be remembered as the man who designed most of the ferry terminals on San Francisco Bay and also the Hunter's Point drydocks, capable of handling the largest ship afloat. Mr. Holmes' many associates and friends will keenly feel the loss of so bright a man to the profession.

R. M. Henderson, vice-president of Dwight P. Robinson Co. with headquarters in New York, who recently made a tour of investigation in western industrial and power centers, reports that the Electric Outlet Co., of which he is an officer and director, is making a radical improvement in electric outlets to which lighting fixtures are at present connected. A new standardized type of receptacle and plug for walls and ceilings which eliminates all wiring back of the lighting fixture canopy is in the course of production by eleven of the principal companies in the wiring device field, including the General Electric Company, Bryant, H. & H., Arrow, Cutler-Hammer, and others of the same high standing. The word "Elexit" has been coined for use to describe this device, which has a far-reaching utility.

The Sawyer-Weber Tool Manufacturing Company of Los Angeles have just placed on the market an ingenious machine for the testing and straightening of connecting rods and the pouring and boring of connecting rod bearings.

Vinson Brothers & Carter, electrical contractors and consulting engineers of Phoenix, Ariz., have recently moved from 227 W. Adams street to 25 E. Adams street. The increase in the business of the firm, which is capable of handling an electrical project of any size, is responsible for the new and larger quarters.

Morby Brothers have established the Electric Shop at American Falls, Idaho. They will handle a complete line of electrical appliances and equipment, in addition to doing contracting and repair work.

The Abel Electrical and Novelty Shop has been opened at Montrose, Colo., by Jack Abel. In addition to carrying a regular line of electrical equipment, the shop will specialize on automobile starting and ignition systems.

O. L. Moulton of the Moulton Electric Company of Cheyenne, Wyo., has announced that his store will be completely remodeled and enlarged to bring it up to the standard of other high class electrical concerns in the Intermountain District.

Lawrence Ebert and Harold Harrington have purchased the Vancouver Electric Works at Vancouver, Wash., a retail and repair shop, and are greatly increasing their stock.

J. E. Kennedy has joined the Celite Products Company as sales engineer for the Northern California district, making his headquarters in the San Francisco office in the Monadnock Building. Mr. Kennedy will specialize in the insulation of heated equipment with Sil-O-Cel products.

The Safety Electric Company, 59 Columbia Square, San Francisco, have just contracted for four special switchboards designed for an oil refining process in the oil fields of Egypt. The equipment will be sent to New York and thence by steamer to Egypt.

The Thomas Products Company of Seattle has been recently incorporated for \$50,000 by Howard D. and O. H. Thomas. The firm will engage in the manufacture of mechanical and electrical fittings, fixtures and devices, searchlights and general electrical work.

Manufacturer, Dealer, and Jobber Activities

The Western Electric Company have announced that their western distributing outlets will in the future handle the complete line of Holloware manufactured by the Manning Bowman Company of Meridian, Conn.

The American Wiremold Company of Hartford, Conn., have opened general offices at 71 West 23rd Street, New York, with C. W. Abbott, vice-president and general sales manager, in charge.

The Richardson-Phoenix Company of Milwaukee, Wis., and the S. F. Bowser Company of Fort Wayne, Ind., have consolidated and will maintain executive headquarters at Fort Wayne. The assets of the new organization are placed at \$10,000,000 and the personnel of both companies has been retained. The two companies represent the leading lubrication engineers and manufacturers of machinery and equipment for the scientific application, conservation and reclamation of petroleum products. The move was made to better meet the requirements of research, engineering and sales.

The Stamp Electric Hoist Company of San Francisco, have placed on the market a complete line of electric hoists with lifting capacities of from 500 lbs. to 15,000 lbs., in types ranging from the stationary hoist to the cab operated mono-rail system. The company is one of the latest adjuncts to Pacific Coast industries.

The Standard Electric Stove Company, Toledo, Ohio, has issued a leaflet descriptive of the new circulation type Standard electric water heater, which controls the heat so that it is utilized with the utmost efficiency. The leaflet describes five models of the new heater, ranging in demand from 660 to 3960 watts. Multiple control permits various degrees of heat to be maintained in the boiler according to individual requirements.

George Drake Smith, formerly manager of the electric vehicle department of the Edison Storage Battery Co., has joined the recently formed Steinmetz Electric Motor Car Corporation of Baltimore as general sales manager. The Steinmetz electric truck will be ready for the market shortly after December first, it is announced.

Harvey Hubbell, Inc., of Bridgeport, Conn., have recently produced two specialty devices in the form of a Te-Cap devised in such a fashion that when inserted in an ordinary Hubbell Te-Slot, it will afford a current outlet for one or more appliances at the same time. The other device is a flush door receptacle, which combines the invisible outlet with perfect safety and ease in use.

The Cutler-Hammer Manufacturing Company, of Milwaukee, have brought out a steel clad non-breakable attachment plug cap, designed for such devices as irons, washing machines, vacuum cleaners and drills. The cap does away with the annoyance of broken caps, a source of inconvenience and expense with the ordinary type.

F. S. Mills, western representative for the National X-Ray Reflector Company of Chicago, is now located in the Security Building, Fifth and Spring streets, Los Angeles. Mr. Mills will be assisted in the future by H. C. Barnard, who has recently joined the company's Pacific Coast offices.

The Remler Radio Manufacturing Company of San Francisco have just taken new quarters at 248 First street, where they will have a total of 12,000 square feet of floor space for their plant and offices. E. T. Cunningham, for years a figure in the development of radio apparatus, is the general manager.

Allied Industries, Inc., manufacturer's representatives of San Francisco, have just taken over a four-story building and warehouse at 455 Second street. In the new building a unique manner has been devised for displaying such stock as pipe and pipe fittings.

The Irvington Varnish and Insulator Company of Irvington, N. J., have completed arrangements whereby the entire Pacific Coast distribution of their products will be handled through Clapp and Lamoree of Los Angeles.

In order to further enhance the great interest being manifested in radio telephone receiving apparatus, and to more fully demonstrate their new equipment, the Westinghouse Electric & Manufacturing Company have installed a complete set in the offices of H. C. Hopkins, publicity representative of the company, in the First National Bank Building, San Francisco. This is the first sample set to be received on the Pacific Coast and tests show that it is more flexible than ordinary types due to the fact that either hard or soft detector tubes may be used.



NOW YOU TELL ONE

The men who "put over" the first Electrical Home in the Northwest telling a few after inspecting the home at Astoria, Ore. On the extreme left is J. H. Sroufe, president of the Oregon Association of Contractors and Dealers. On the step looking out the camera is W. D. Moriarty, field representative for the Northwest Electrical Service League. Next comes J. R. Tomlinson, treasurer of the contractor-dealers' association, while the fat man with the congenial smile is F. R. Whittlesey, secretary of the organization.

Business Outlook in Western Market Centers

Reflecting the Trend of Community Thought on Conditions and Events Affecting
Business and Industrial Activities Throughout the West

Compiled and edited for the Journal of Electricity and Western Industry by correspondents in all principal Western cities.

BUILDING PERMITS AND BANK CLEARINGS FOR OCTOBER IN SIX WESTERN CITIES

	No of Permits	Value	Bank Clearings
San Francisco	672	\$2,498,532	\$577,100,000
Los Angeles	4,489	9,781,394	365,770,000
Spokane	271	442,205	48,454,000
Seattle	960	750,115	131,096,000
Portland	1,441	1,942,510	153,775,000
Salt Lake City.....	119	284,610	58,441,000

SAN FRANCISCO

Evidences of improvement continue to be noted. Retail sales have been affected somewhat by weather conditions. Dealers in medium priced merchandise report a fairly brisk business. Tailoring and wholesale woolen business is quiet. Fur dealers report a fair volume of trade and in the jewelry lines business has shown some increase. Furniture trade, both retail and wholesale, is better than formerly. Building activity is increasing and there is less unemployment. Collections, generally, continue to be slow.

Loanable funds are increasing and deposits are showing a slight gain among many banks. Export food shipments to Europe continue heavy.

LOS ANGELES

From present indications Los Angeles will jump from third place to second in building activities for the country due to the persistent rate of increase in total building permits, backed by the new building enterprises which will actually be under way before January 1st. All the business which relies largely upon retail trade with residence consumers is enjoying sustained sales despite the reported conservatism displayed by the buying public.

That credit conditions are easier, due to returns from agricultural products, is reflected in bank clearings which totaled \$365,770,000.

Industrial-metal trades are finding it very difficult to maintain sales; one of the reasons being that dull eastern business, and the advertising which this section has naturally received as a "White Spot," brings eastern competition in at extremely low prices. This condition will probably not be much improved until the eastern metal activity returns to normal.

SALT LAKE CITY

The credit situation has been further relieved by the money realized from the sale of agricultural and livestock products. A recent re-financing of one of the principal sugar producing companies, to the extent of \$10,000,000, has stabilized the sugar beet industry, enabling farmers to receive cash payment upon delivery of beets at the mills.

Retail sales in clothing and other lines seem to have temporarily revived following the cessation of the period of warm weather, and the increased buying power afforded by the crop returns.

Building permits show a slight decline in number and value, compared with September, and builders anticipate a further slowing up, with consequent decline in the demand for lumber and construction materials. Unemployment has not improved.

DENVER

Business is showing improvement in Denver at this time. Colorado record crops are being placed on the market, which is serving to place farmers of the state on their feet once more and improve business generally in all lines.

Building is on the increase in Denver, which is another sign that things are righting themselves after the period of depression. The increase in building last month over October a year ago was \$667,450. The increase for the first ten months of this year over the same period last year was \$1,732,265. The total number of permits issued during the month just past equaled \$1,033,700. The total for the first ten months is \$8,442,225.

It seems to be the general opinion among businessmen that by spring business will be going ahead in good style and that from now until then it will grow better and better.

SPOKANE

Electrical jobbers report a recent demand for insulators and other pole line construction material. Building construction continues active and is extending later into the year than is usual. Real estate men and lumbermen expect 1922 to far exceed this record.

The wholesale lumber business is feeling the reflection of similar house building conditions in the East. Despite a number of general conditions which would ordinarily depress the lumber trade, it is now in better shape than it has been this year. Select lumber is scarce and in demand which is also true of shop lumber. Common lumber is plentiful. As a result of the present condition, numerous planing mills are to be operated this winter that it had been expected to shut down and more logging camps will be opened for the winter cut. While mining men

are encouraged over the slight advance of lead in recent months, only a few of the larger Coeur d'Alene properties are operating.

SEATTLE

During the month of October, Seattle's bank clearings were \$131,096,000. Building permits totaled \$750,115, and the real estate transfers, \$1,201,130. Seattle's bank clearings for the past ten months were \$1,337,711,848; building permits, \$11,774,390; and real estate transfers, \$17,639,627.

Believed by merchants in the city to demonstrate a marked degree the latent purchasing power of Seattle and environs, a three-day sale recently conducted by one of the big department stores showed remarkable results.

Early sale of farm products throughout the state has supplied much needed credit, and the expansion of building activity, particularly along residential lines, is accredited primarily to this source.

Active cargo buying and seasonal orders from domestic consumers during the past month produced a volume of new business for the lumber mills in the district. Attesting that lumber conditions are improving, mills in the Inland Empire district have reversed decisions made last summer to close during the fall and winter, and according to recent announcements, plan to continue operation.

PORTLAND

Business in most all lines continues good and it is expected that there will be a continued improvement from now until the first of the year. Unusually fine fall weather has delayed fall retail business to some extent, the volume still being below normal. Trade in jobbing lines continues to improve slowly and prospects are good for a fairly active winter's business. Merchants as a whole are taking an optimistic view of the future.

The strong demand for lumber of all grades is the most encouraging feature of the local commercial situation. Lumber and wheat exports continue in large volume and two cargoes of apples were shipped recently.

Building construction which has been very active so far this year has given quite an impetus by actual work starting on a half-million dollar apartment house. Practically no price changes are noted of late in prices of building materials or in labor of the building trades.

Conditions in the electrical industry are very encouraging. Retail sales are good and contracting particularly on the smaller jobs is better than was anticipated a few months ago. Most dealers expect to do about the same holiday business as they did a year ago.

Construction News and Industrial Developments

Suggesting to the Engineer, Contractor, Manufacturer, Dealer, Agent and
All Business Men Opportunities for New Business

THE PACIFIC NORTHWEST

HARRISON, IDA.—Bids were received by the city clerk of this place up to October 24 for the erection of an electric light and power plant system.

BREMERTON, WASH.—McMyler Interstate Co. of Pittsburgh, Pa., has been awarded the contract for a large floating crane at the navy yard at \$165,000.

ELLENSBERG, WASH.—A new bridge across the Yakima river to replace the present structure will be one of the large items included in the next county budget.

WALLA WALLA, WASH.—Oscar Ingram, president of the Ingram Air Locked Rim Co., has returned from the East and is looking for a suitable site for a factory here.

HOQUIAM, WASH.—The city commissioners have awarded the NePage-McKenney Co., of Seattle, the contract for installing a boulevard lighting system on 8th and I streets.

SATTLE, WASH.—Schack, Young and Meyers, architects, have completed plans for the three-story addition to the plant of the Seattle Box Company at Fourth and Spokane streets.

PORTLAND, ORE.—Plans have been announced for the erection of a wholesale market place which will cover five blocks and cost \$1,000,000, in the East side business district of Portland.

BELLINGHAM, WASH.—An election will be held by Whatcom county in December to vote on three plans for port development involving the building of port terminals and dredging of two waterways.

PORT ANGELES, WASH.—The Northwestern Power & Mfg. Co., 620 New York Building, Seattle, has filed preliminary permit for power development on Lake Crescent and Lyre River, Clellam county, Wash.

SEATTLE, WASH.—It is reported that the Commerce Steel Company has acquired a tract of land near Tekoa upon which they plan to erect blast furnaces capable of supplying 500 tons of pig iron daily.

WALLA WALLA, WASH.—The Union Bridge Co., of Portland, was the lowest bidder on the proposed \$426,900 steel bridge across the Columbia river between Pasco and Kennewick. Work will begin within 14 to 18 months.

YAKIMA, WASH.—Articles of incorporation of the T & V Mfg. Co. have been filed by H. B. Trask, Geo. A. Allen, H. H. Bates and others; capital stock, \$100,000. They will engage in making and handling the Luman sharpener.

PORTLAND, ORE.—C. O. Purdin, vice-president of the Portland Realty and Trust Company, announces the sale of a tract of land to the Multnomah Trunk and Bag Company for the erection of a three-story concrete factory building.

PORTLAND, ORE.—The Inman-Poulsen Lumber Co. is planning extensive improvements to the dock facilities of the mill in the upper harbor. The present dock will be extended 450 ft. for a width of 45 ft. and a new dock 300 ft. long and 350 ft. deep will be constructed.

PORTLAND, ORE.—The water department of the city of Portland plans to construct another pipe line from the Bull Run headworks to the city of Portland, at a cost of \$2,000,000. The plan is to begin the work next year and continue it over a period of three years.

CANYON CITY, ORE.—The town of Canyon City is considering a plan to install a light and power system or buy the equipment of the Consolidated Electric Company. Before any action can be taken to finance the proposition it will have to be put to a vote of the people.

SALEM, ORE.—Application has been filed with the state engineer by E. C. Latourette of Oregon City for a permit to appropriate 5 sec. ft. of water from a small stream tributary to the Willamette river for development of power and lighting to be supplied to East Canby Gardens.

PORTLAND, ORE.—D. C. O'Reilly has received permission from the Public Dock Commission to completely reconstruct his sand and gravel dock. The Hurley Mason Company has been granted the contract for the buildings. It is reported that O'Reilly is in the market for the latest types of machinery for handling sand and gravel.

CANBY, ORE.—A franchise has been granted by the city council of Canby to M. J. Lee to furnish light and power service to the town of Canby and surrounding district. It is reported that Mr. Lee's company will purchase energy from the Portland Railway Light & Power Company at Oregon City and conduct same to Canby over a transmission line to be built.

ABERDEEN, WASH.—Due to failure of the city authorities to interest the state in a plan to help finance the construction of another bridge over the Wishkah river, considered a part of the Olympia highway, a movement is on foot among interested property owners to partially finance the undertaking, the cost of which is estimated at \$100,000.

SALEM, ORE.—M. J. Anderson of Portland has refilled a lapsed permit to appropriate 75 second-feet of water from the south fork of the Coquille river, and for permit to build a dam in the river for the storage of 18,000 acre-feet of water for the development of power for manufacturing and lighting. The cost of the project is estimated at \$750,000 and approximately 13,000 hp. can be developed. Date of development is problematical.

YAKIMA, WASH.—It is reported that the federal government has authorized the spending of \$3,600,000 on reclamation projects in the state of Washington during the coming winter and that half of this amount is to be spent on the Kennewick unit of the Sunnyside canal. This would provide for a diversion dam, headworks at Prosser and the building of a power canal and pumping plant, and start on the construction of 20 miles of canal that will ultimately irrigate 36,000 acres.

THE PACIFIC CENTRAL DISTRICT

PORTERVILLE, CAL.—The Rumble Foundry Company are planning extensions to their plant on 4th Street.

OAKLAND, CAL.—Montgomery Ward & Co., Chicago mail order merchants, are seeking a location for a store and mail order warehouse in Oakland.

BAKERSFIELD, CAL.—The Jersey Creamery Corporation, of Taft, has filed articles of incorporation, capital stock \$150,000. Directors: Max Schumacher, Ray M. Gingrach and E. L. Burnham, all of Taft.

SACRAMENTO, CAL.—John Breuner and Company, furniture dealers, are contemplating the erection of a new \$200,000 store here.

LOS BANOS, CAL.—S. DeLuca, owner of the Los Banos cheese factory, will move to San Jose November 1st where he will build a modern factory.

PITTSBURG, CAL.—W. R. King of Oakland is closing a deal for a waterfront site for the erection of a wall board factory to cost half a million dollars.

SACRAMENTO, CAL.—The McGillivray Construction Co., contractors, are preparing to break ground for the construction of the Virden Packing Co.'s storage plant.

TRACY, CAL.—F. L. Glass and R. Patrick were recent visitors here on business connected with the milk condensery to be built this winter. The company is capitalized at \$250,000.

SAN MATEO, CAL.—This city has voted \$200,000 for the erection of two new primary schools. Plans are being prepared and contracts will be let as soon as the bonds are sold.

QUINCY, CAL.—F. Ganser has purchased the Quincy electric light plant from A. L. and O. P. Payne and is contemplating numerous improvements to both plant and transmission lines.

SACRAMENTO, CAL.—George W. Peltier has announced that plans are being prepared for a new \$500,000 Paramount Theater. The building will be built by the Famous Players Lasky Corporation of California.

SACRAMENTO, CAL.—Plans for the new Isleton bridge, prepared by County Engineer Drury Butler, have been adopted by the supervisors and bids will be received on December 5. The bridge will cost \$131,000.

STOCKTON, CAL.—The Portable Wireless Telephone Co. was recently incorporated here with capital stock of \$20,000, par value \$100, subs. \$500. The directors are G. A. Turner, Paul Ward, Carlton C. Case.

SAN FRANCISCO, CAL.—Plans for the rebuilding of the industrial plant of the San Francisco Association for the Blind at Folsom and Langton streets, which was destroyed by fire on Oct. 19, are being formulated.

MERCED, CAL.—The Merced Irrigation District will vote on the proposed issue of \$12,000,000 in bonds for the purchase of the Crocker-Huffman irrigation system and the building of a dam and power plant at Exchequer.

SAN FRANCISCO, CAL.—A building permit has been issued for the erection of the 22-story concrete and steel office building for the Standard Oil Company, at an estimated cost of \$2,400,000. Lingren Co. are the contractors.

MARYSVILLE, CAL.—It is reported that the Western Pacific Railroad Company has leased the site of the present base ball park to a company which will erect a box factory and mill to supply the raisin and fruit industries in this section.

SAN FRANCISCO, CAL.—Bids have been called for November 16 by the Board of Public Works for the first unit of the new Mission High School to cost approximately \$350,000. Specifications are on file in the Board of Public Works offices.

PETALUMA, CAL.—The Cinnebar Farm Center has received a report from Howe, Peters and Linn, San Francisco engineers, regarding the formation of an irrigation district near here. Seven thousand acres will be irrigated at a cost of \$600,000.

TERRA BELLA, CAL.—Dr. P. A. Bonquet, county plant pathologist, is planning the erection of a lime sulphur plant at Terra Bella. Three tanks will be required, including a 1200-gal. boiling tank, 2000-gal. settling tank and a 5000-gal. storage tank. A small boiler will also be necessary.

NAPA, CAL.—The Larsen Seagrist Company of San Francisco has been awarded the contract for the construction of the first of three new schools for this city on a bid of \$135,466, exclusive of the heating plant. Bids will soon be called for a \$290,000 grammar school and a \$300,000 high school.

SANTA MARIA, CAL.—Bids have been called for November 28 for the erection of a hundred, hundred and fifty, and two hundred thousand gallon elevated steel tank of a height of ninety-two feet. Specifications on file with Harry Neel, Jr., city engineer.

OAKLAND, CAL.—Commissioner Frank Colburn has recommended to the city council that new units to the high pressure water system in the industrial and commercial district be immediately installed. It is estimated that the new units will cost \$560,000.

MANTECA, CAL.—The Pacific Gas & Electric Co. have set aside approximately \$35,000 for improvements to be made in the Manteca section. The power house here will be practically refurnished with new and larger machines, the present transformers being too small.

VACAVILLE, CAL.—The Vacaville Electric and Machine Company has been incorporated with a capital stock of \$25,000 by E. Endstrom, H. A. Woods and others. The company will manufacture and deal in pumps, engines, electrical machinery and equipment of all kinds.

THE INTERMOUNTAIN DISTRICT

POCATELLO, IDA.—Work on the bridge across the Payette river near here will begin December first, according to Otto Wilhelm, county commissioner. The structure will cost \$60,000.

SALT LAKE CITY, UTAH.—The city commission has contracted with Margetts and Kleinschmidt, civil engineers, to make a survey of the drainage possibilities of the western portion of the city.

DENVER, COLO.—The Presbyterian Church has let the contract for the first unit of its \$400,000 hospital to Alex Simpson, Jr., for \$70,000. The remainder of the building will not be erected until the money subscribed has been collected.

ALAMOSA, COLO.—Frank J. Long of Denver has made arrangements with local business men for the erection of a store to house the electrical supply business which he contemplates establishing here.

LOVELAND, COLO.—The city of Loveland has won its suit for the power and distribution system of the Western Light and Power Company. The city must pay the company \$149,063 for the properties, according to a court ruling.

BOISE, IDA.—With the signing of the contract for the irrigation of the 15,000 acres known as Hillcrest by Secretary of the Interior Fall, work is expected to start immediately. The pumping plant and canals will cost approximately \$1,200,000.

MISSOULA, MONT.—Temporary falsework and machinery erected for the construction of a 600-ft. steel span bridge at Noxon in Sanders county went into the river during a windstorm. New machinery will be needed. The bridge is a federal aid project, the contractor's price being \$100,000.

GREAT FALLS, MONT.—The Kootenai Power Construction Co., a New York concern, has filed application with the federal power commission to develop power at Kootenai Falls. Under the

terms of the permit the company will be required to build a masonry dam 110 ft. high and 2100 ft. long.

MOAB, UTAH.—A movement is on foot to interest Los Angeles capital in the construction of a railroad between Monticello and Durango, Colo., the present rail head. The road would connect the rich agricultural and mining districts of Monticello, San Juan valley, Mancos and Cortez with the outside.

THE PACIFIC SOUTHWEST

LOS ANGELES, CAL.—The Mission Hosiery Company is planning a two-story factory building at Moneta and Thirty-seventh streets. Endelman and Barnett are the architects.

LOS ANGELES, CAL.—The entire plant of Braun, Bryant & Anderson, asphalt manufacturers at Santa Monica, was destroyed by fire recently. The loss is approximately \$50,000.

LONG BEACH, CAL.—Helme Bros., local agents for Westinghouse batteries and Rayfield carburetors, contemplate the erection of a building at 1009 American Ave. in the near future.

LOS ANGELES, CAL.—The Kittle Mfg. Co., 643 Santa Fe Ave., has announced the construction of a \$65,000 plant. The company is engaged in stamping of sheet metals and enameling.

LOS ANGELES, CAL.—The Enterprise Foundry Company of Los Angeles was recently incorporated for \$100,000 by L. L. Otis, W. L. Wilson, J. R. Edmunds, H. F. Prince and S. M. Haskins.

BURBANK, CAL.—The new spun-aluminum ware plant of the Aluminum-Metal-Products Company has been started by letting the contract for the foundations to Farley and Farley of Burbank.

FULLERTON, CAL.—M. Eugene Durfee, architect, is preparing plans for a hotel under the control of the Fullerton Community Hotel Company. The structure will cost \$130,000 exclusive of furnishings.

PHOENIX, ARIZ.—The Methodist Episcopal Church South will receive bids for the new church in accordance with the plans prepared by Architects Lescher, Kibbey and Mahoney. The estimated cost is \$100,000.

RIVERSIDE, CAL.—Bids for the acceptance of \$143,000 bonds for construction of levees in the Palo Verde district will be readvertised Nov. 7th, according to action taken by the county board of supervisors.

POMONA, CAL.—The firm of Weeks and Orr, architects, have completed plans for the new \$425,000 high school to be erected here. As soon as the plans are approved by the Board of Education, bids will be asked.

GLENDAL, CAL.—Guy H. Gibbs of the Pyramid Paints Products Co., 704 East Broadway, has formed a partnership with Frederick Hays and Clifford Shaw. They will manufacture paints at 125 East Ninth St., Los Angeles.

LONG BEACH, CAL.—The contract for the erection of the new building for the American Telephone Building has been awarded to J. W. Davison and Graham Brothers. Equipment to cost \$400,000 will be installed in the structure.

LONG BEACH, CAL.—The Farmers and Merchants Bank has definitely arranged with W. H. Austin, architect, for plans on the new bank building which will be started next spring on the bank property at 3rd and Pine. The building will have six stories and the estimated cost is \$300,000.

LONG BEACH, CAL.—A 12-story apartment house may be erected at the corner of Ocean Boulevard and Magnolia Avenue. W. H. Howard is reported as saying that the structure will call for the expenditure of \$1,500,000 and may be so arranged that the occupants can own their own apartments.

SAN BERNARDINO, CAL.—A new steam power plant will shortly be erected at the San Bernardino shops of the Santa Fe Railroad, according to H. S. Wall, mechanical superintendent of the coast lines. The plant will cost \$200,000.

BLYTHE, CAL.—The board of directors of the Blythe Water Company have appointed W. J. Burton and E. F. Williams as a committee to find competent men to take charge of the engineering problems of the water company and the levee district.

LOS ANGELES, CAL.—Work of laying new conduits on Western Avenue for the Southern California Telephone Company will be started in November. G. S. Reynolds is the contractor for that portion between Wilshire Boulevard and Tenth street.

SANTA BARBARA, CAL.—Willis Polk, architect of San Francisco, is reported to be preparing plans for a \$1,000,000 hotel. It is understood that William M. Graham has arranged for an option on 25 acres in fashionable Montecito as a site for his new hostelry.

LOS ANGELES, CAL.—The L. A. County Supervisors are taking bids for the ornamental lighting in Southgate Lighting District on Long Beach Boulevard, where 19 new Marbelite posts will be installed and the 55 present posts will have their installation completed.

HOLLYWOOD, CAL.—The Milwaukee Building Company has secured the permit for a concrete and hollow tile building to cost \$187,000 to be erected at 6737 Hollywood Boulevard. The Hollywood Improvement Company will rent the four stores. Each one will be 77 by 119 ft.

LOS ANGELES, CAL.—The Southern California Gas Company is spending \$25,000 in remodeling its 6-story building located at 945 S. Broadway. A shifting of several departments will be made to new quarters to facilitate handling the increased business of the company.

FRESNO, CAL.—Milo L. Rowell has announced that he will build a new class A three-story hotel on his property at the corner of Kern and L streets. R. F. Felchlin, architect, says the building will be tile and pressed brick facing and will cost approximately \$135,000.

LOS ANGELES, CAL.—The Cinemaphone Company of California has been incorporated with an authorized capital of \$1,000,000 and with George J. Webster as president. Plans for a factory building which will embrace machine shops, electrical laboratory, etc., are being prepared by the Pacific Coast office of the Austin company.

LOS ANGELES, CAL.—A new theatre in the residence district was contracted for by Al Nelson, the building to be at the intersection of Vermont and Slauson. Space for stores will be included and any combination from a few large fronts to 15 small stores can be provided according to the present plans. H. C. Deckber is the architect for F. W. Braun, owner.

LONG BEACH, CAL.—The Chamber of Commerce will spend \$100,000 for its new quarters and furnishings. The contract for the building was let to G. D. Sanford for approximately \$72,000. W. H. Austin, the architect, has designed the 2-story structure so as to provide auditorium, dressing rooms, club facilities and dining rooms together with a large lobby and mezzanine floor. Work will be started at once.

LOS ANGELES, CAL.—It is planned to replace the Shrine Temple which burned nearly two years ago with a \$1,000,000 structure to be located at the corner of Jefferson and Royal streets. If present plans materialize the building will have an auditorium with a seating capacity of 9,000 people. The banquet hall will accommodate more than half as many people as the auditorium. Edelman and Barnett, architects, are working with John C. Austin in developing plans and it is the intention to begin actual construction the first of the year.

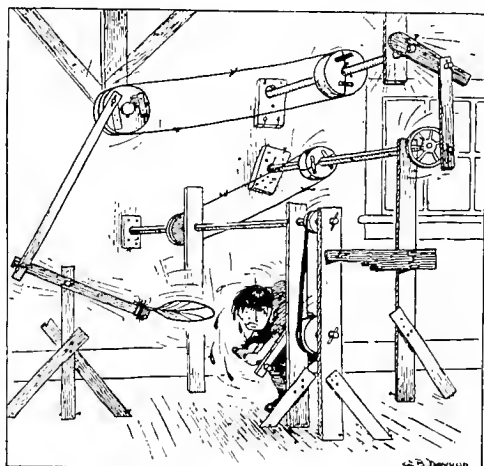


We Breathe Easier

After the nerve-racking crisis in the clothing situation reported in our last issue, we are glad to pass on the following from the market reports:

Print Cloths Stand After See Sawing
Cotton Lifts Slightly in Rally
Packers' Hides Show Firm Tone
Woolens Reported Unchanged.

* * *



ROLL YOUR OWN MORAL

"Gee, this fan I made doesn't keep me as cool as I thought it would."
(We borrowed this from Judge.)

* * *

Things We Never Find

\$1,000,000.
Our lead pencil.
Our eraser.
The boss late when we are.
Theater tickets.
A seat in the street car.
The time.
A rainproof overcoat.
Chicken in a tamale.
The push button in the dark.
Non floating soap in the bathtub.
The mosquito which singeth in the ear at midnight.
The top step which is not upon the stair.

* * *

Complaints against telephone service are the fashion these days—but they are not all of them justified. One young woman, for instance, recently registered the objection that although she remained in all afternoon waiting for a telephone call, her friend had been unable to get her. It developed upon investigation that she had spent the time while waiting in calling up a few friends whom she had not seen for a long time.

In Defense of the Electrical Profession

Doctors:

It was a doctor who, when asked what he operated on the patient for, said, "\$500."

"No," said his questioner, "what I mean is, what did he have?"

"\$500," said the doctor.

Lawyers:

The degrees of the law are defined as follows:

First a lawyer wins his case. Thus he gets "on."

Soon he becomes rich, whereupon he gets "honor."

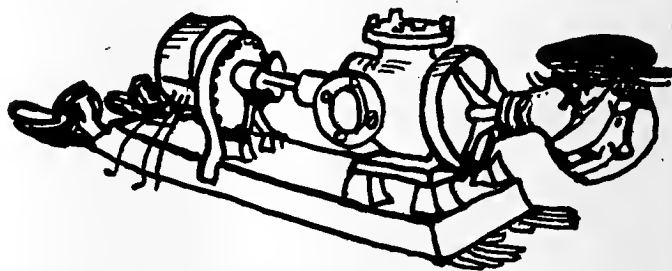
As a consequence he retires at an early age. Then he gets "honest."

But Electricians:

It was an electrical factory, on the other hand, where the admonition was posted in the recreation room, "These seats are for ladies. Gentlemen will kindly not make use of them until the ladies are seated." What more could be asked in gentlemanly conduct?

* * *

ELECTRICAL HYBRIDS



XVI—The Electrical Pumpire

The electrical pumpire
Is a chap you must admire,
In a hole he is a handy sort of devil.
Though he keeps the pitcher full,
He can manage with his pull—
He uplifts, when all is said, the common level.

He's the man the public likes
For he settles all the strikes
(Whether air is what they struck or merely water).
He has power—and that's why
People say his head is high—
But he runs, while others play, just when he oughter.

He is steady but not slow,
Uses naught but H₂O,
Though they say his pipe collection is enlarging.
When a player's motive's base
And he steals to keep his place—
He can put him in deep water through discharging.

Journal of Electricity and Western Industry

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December 1, 1921

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ROBERT SIBLEY, Editor

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Journal of Electricity and Western Industry

A semi-monthly chronicle of western events, advocating the economy, efficiency and convenience of electric power for all industries of the West—manufacturing, agricultural, mining, merchandising, home building and home making. Interpreting the value of electrical development to the business and financial man, the industrial man, the power man, wholesaler and retailer, contractor and constructor, engineer and home owner.

Because of the abundance of water power in the West susceptible of economical development, a dependable, uninterrupted supply of cheaper electric power is assured for these industries. The basic industry of the West—hydro-electric power generation—for which Journal of Electricity and Western Industry is the spokesman, is therefore logically and inseparably linked to the growth and prosperity of all phases of our daily life and business.

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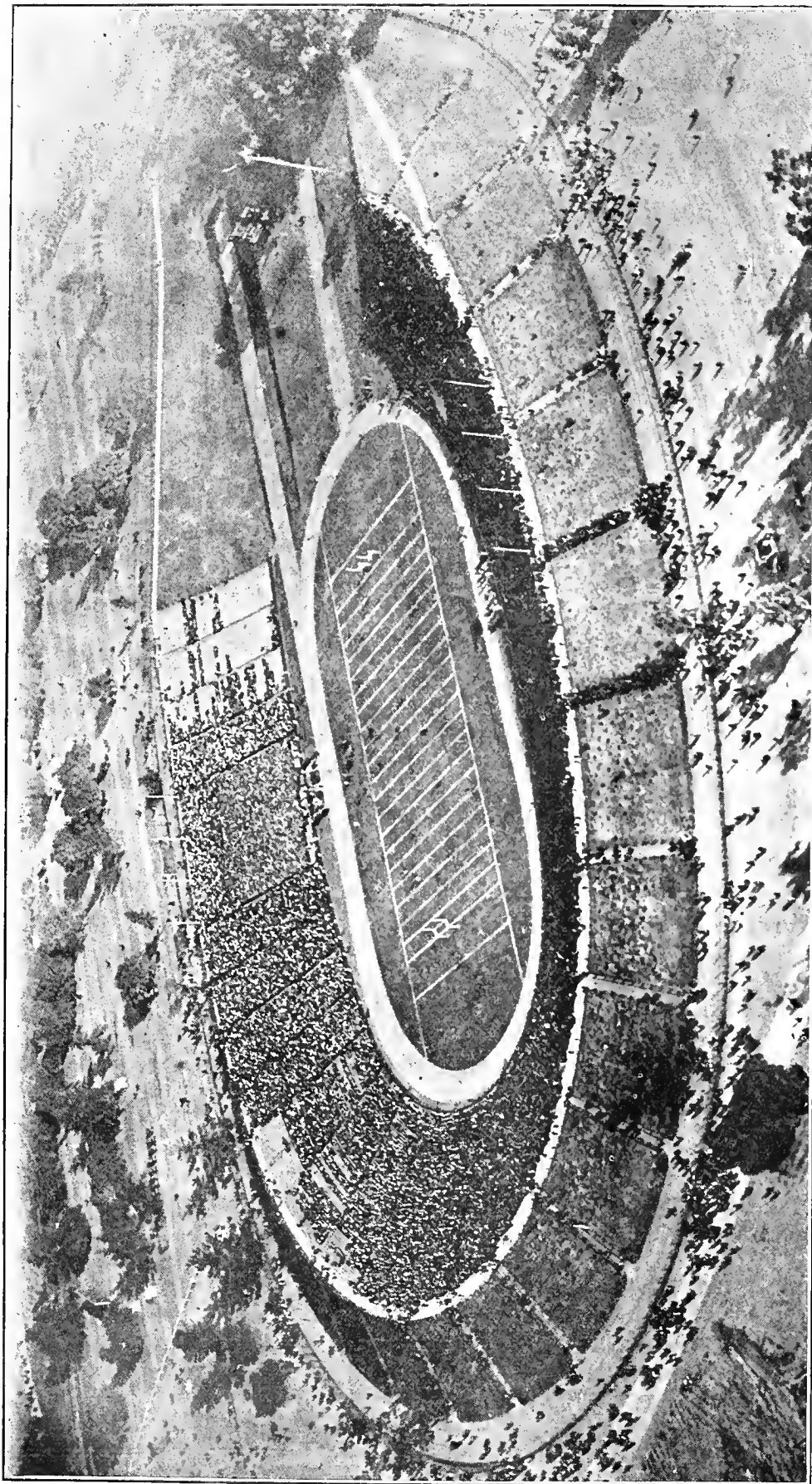
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WESTERN UNIVERSITIES BUILD STADIA OF IMPRESSIVE DIMENSIONS

AN airplane view of the new Stanford Stadium where 60,000 people recently witnessed the Big Game between Stanford and the University of California. This structure is one of the several impressive outdoor athletic fields of this type which have recently been erected or planned by western universities, perhaps the most daring in scope being the concrete, double decked, Coliseum-type stadium of the University of California for which over a million dollars has just been raised and the expenditure of a million and a half is contemplated.

Professors C. D. Marx, C. B. Wing and W. F. Durand of the engineering departments of Stanford University are responsible for the engineering direction of the impressive structure shown above. An interesting feature of the game for which the crowds are here shown gathering was the fact that it places the California team at the head of Pacific Coast intercollegiate football, with a chance of repeating the national championship which they captured last year by defeating Ohio State with the decisive score of 28-0. *(Photo by Marron)*

Journal of Electricity and Western Industry

A McGraw-Hill Publication

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The INFORMAL INVESTIGATION

THE great war has left one lesson indelibly impressed upon the human race—namely, that men can get together and cooperate when the emergency is great and the spirit willing. In America perhaps the outstanding feature of national effort during the war was the informality of this get-together spirit and the willingness of every citizen to listen to the other man's presentation and give his utterance standing in court.

In every department of present day activity, this same spirit of frank and friendly facing of mutual problems is to be seen. The informality and direct dealing with which the disarmament conference was initiated has aroused a great hope in a world weary of diplomacy and has furnished an example worthy of emulation.

In western labor relations a similar spirit of open consideration of difficulties is the dominant and hopeful thought back of the industrial relations idea, inaugurated as part of The American Plan in the Pacific Coast building industry. Even in the academic field, the same idea is finding favor and we find the University of California, now the largest university of the world, looking to an annual informal investigating committee of its graduates to keep it informed of short-

comings and dangerous tendencies which may readily be remedied in time.

Coming now to the electrical industry, the day of opportunity is at hand. It is not enough to have organized means for open and frank discussion within the industry itself. The problem of the morrow is far beyond. It deals directly with the body politic as a whole. Let the electrical industry in each community throughout the West openly court informal investigation from the public it serves. Let district managers of power companies encourage local citizens, particularly citizens of prominence in the use of electric light and power, to constitute themselves as committees of investigation. Place within their hands every facility for satisfying the yearning for more complete information on power rates, costs, service and public policy necessary in the upbuilding of the West and give them the utmost freedom of thought and action. No fear need be felt as to the outcome.

There is a great day ahead for the public service industry in the West with its initiative, its frankness, its splendid record of past achievement—and by openly courting informal investigation, it will be found that the people at large will be swift to respond in confidence and in generous support.

For Greater National Unity in Organized Effort

AT the recent Del Monte meeting of the Pacific Coast Geographic Division, N. E. L. A., action was taken to change the name of the organization to "Pacific Coast Electrical Association." It is felt that the greater intelligibility and convenience of the name will enable the association to get its roots more firmly in local soil—and through its healthy growth, at the same time strengthen its affiliations with the parent organization.

In local activities a splendid opportunity is thus offered either to make one all-powerful organization for the electrical industry, participated in equally by all branches of the industry, or else to still further concentrate energy on central station activities. Many argue for the latter course, and unless all parties join in the endeavor to broaden this activity into a general organization for the industry as a whole it is bound to meet with failure from the start. There is much truth in the statement that perhaps the California Electrical Cooperative Campaign already

fairly represents all branches of the industry and that the proposed broadened activity might impair the engineering committee's work and other activities of the Pacific Coast Electrical Association that have in the past brought such splendid results for the central station industry in the West.

The committee appointed at Del Monte to consider these things should well weigh all the different angles that go to make up the whole before recommending any definite action at the annual meeting next April. However, there is less question in the matter of extending associate membership to municipal employes, and in the matter of broadening the committee activities, and to a certain degree eligibility of the holding of office to embrace more of the industry as a whole, affirmative action might well be taken. There is a great year ahead for the Pacific Coast Electrical Association, and with the magnificent support that is being given this year by the national headquarters in New York, the stage is set for the greatest development of local strength within the industry as well as in public relations.

The Problem of Illuminating the Stadium

WIDESPREAD interest is centering around the Greek Theatres and Stadiums of the West, both existing and proposed. Community spirit is the embodiment of democratic progress and in recent years this has been recognized and further provisions made for its encouragement and expression, by building spacious auditoriums, or where climatic conditions are ideal, greatly increased opportunity is afforded in open-air theatres and stadiums.

At this time we are without information in regard to complete development of any of these outdoor projects from the standpoint of correct and adequate illumination. It is difficult, it is true, to light effectively the center of a stadium or open-air theatre having the comfort of an entire audience in mind. The task is worthy of the illuminating engineering profession. The West, always pioneering, has progressed far beyond the experimental stages of landscape and outdoor illumination, in the research and development carried on by the illuminating engineers of the motion picture industry.

In the case of outdoor illumination of large areas we must deal with greater intensities and capacities than are found in ordinary use except in the motion picture business. The essential features of construction which illuminating engineers would require in stadium lighting might be treated by the designing architects, so as to harmonize with and even add to the general symmetry and beauty of the entire plan.

We do not hesitate to prophesy that great benefit will accrue to an appreciative public if these structures can be made doubly useful by the attractive and scientific application of electric lighting.

The Psychology of a Christmas Slogan

AMONG Christmas slogans for this year, that of the California Electrical Cooperative Campaign—"Electrical Gifts are Wonderful Gifts—Make It an Electrical Christmas"—carries an especial appeal. This is a substitute for the former slogan "Electrical Gifts are Practical Gifts." The thought back of the change is that Christmas is a time of sentiment rather than of practical considerations and that electrical gifts should rather be placed in the category of the shining events of Christmas day than in that of the winter underwear and mittens which from early childhood have disappointed the small boy. No one will forget the practical side of the present. There is good psychology in the phrase. Let's make it a wonderful Christmas.

The Trade Mark of Good Service

CONSIDERABLE discussion has been occasioned by the series of advertisements appearing under the name of the Pacific States Electric Company in Los Angeles newspapers. In general purpose, these advertisements were intended to build good will for the entire industry, urging the recognition and employment of legitimate contractors for the installa-

tion of electrical home equipment and establishing a trade mark of good service. Some exception was taken to certain wording which, it was felt, suggested that the use of the wares of the advertising company alone identified the better type contractor and protest was made by the Southern California Contractors and Dealers against this practice.

The Pacific States Electric Company has shown its good will by modifying the phrases in question and the resolutions of protest have been rescinded, a vote of confidence on the part of the Southern California division being passed in their place. The incident so far as this organization is concerned is closed.

The idea of a quality trade mark is a good one—indeed it is one which should have been adopted by the entire industry long ago. The Pacific States Electric Company's action is the first recognition of this need. There is no reason why an organization of wider scope, such as the Contractor-Dealers' Association, should not make its trade mark a public guaranty of quality—provided, of course, that it assigns to itself no exclusive rights to good service, but only to service exclusively good. Some time ago the Journal of Electricity and Western Industry in these columns suggested a western trade mark even broader in scope which should be open to all, living up to certain standards of service. Such a mark of distinction could be open to no misrepresentations and would tend to extend that public confidence which the progressive work of the industry in the West has already established.

Who Is It Formulates Public Opinion?

PUBLIC opinion is recognized as the most important element in the determination of events and in the awards of victory or failure, not only to individuals but to institutions. Who is it makes up the audience which formulates public opinion?

To the thoughtful man it is apparent that in matters of business interest there are certain organized channels through which people of influence may be reached. It is to these groups and through them to these individuals that the electrical idea must be sold on the self interest basis, so that it may become a forceful driving vision expressed in their every activity. Within the industry are the central station executives, the executive engineers, the purchasing agents and employees generally. These combined with the manufacturers, the jobbers, the jobbers' salesmen and contractor-dealers, make a powerful array of men well aligned and organized to stand for the electrical idea. Next come the great users of power, who are to be reached through the agricultural and industrial associations, the manufacturers' associations and the engineering societies, both national and local. Following these are the civic and commercial development bodies, chambers of commerce, universities, colleges, public schools and libraries.

With the pride of cities and districts enlisted, backed by the bankers and investment houses—a

hearty and enthusiastic support may fairly be counted on for every activity that is truly devoted to the upbuilding and permanent happiness of the empire west of the Rockies.

The Crushing Burden of Taxation

STATISTICS show that the agricultural wealth in California during the past year was \$328,000,000 and that the taxes paid by city, county and municipality amounted to \$339,000,000. In other words, more than the land itself is producing is paid out in the running of government. This is not alone true of the commonwealth of California, but other communities throughout the West are equally burdened. There comes to our attention, for instance, the proposed taxes for a 40-acre tract of land in the famous Bitter Root Valley of Montana. Seven per cent of the assessed valuation for this land is demanded in taxes for the forthcoming year. Let us see to it that extravagance and madness in expenditure of government are curtailed.

Making a Speech to a Nation

THOSE who were privileged to hear the tribute of President Harding across the bier of the unknown soldier boy on Armistice day were deeply impressed by the great inspirational possibilities opened up through the development of nation-wide telephony, combined with amplifying devices. In New York, Chicago and San Francisco great crowds of people assembled at the given moment, indoors and without, and listened with uncovered heads to a speech made in Washington, D. C. In San Francisco, the Civic Auditorium was filled and the great square of the Civic Center black with the waiting crowds. And across blizzards and sunshine for three thousand miles of prairies and mountain, came the president's voice, so clear that every man in the crowd could hear his syllables, so distinct that its timbre carried home the emotion that mastered him and brought tears to the eyes of those who listened. There are great possibilities here of unifying the spirit of a nation. Think what such a direct appeal would mean on the occasion of the declaration of war, or the closing of one! The electrical science which has contributed toward making possible this achievement, and it is pleasing to remember that a western invention played an important part in its success, has added a new factor to the life of the nation and one which suggests far-reaching applications of major importance.

United States Ownership of Foreign Securities

THE former world-wide commercial supremacy of Great Britain was in large measure bound up with British ownership of foreign securities. England's trade was continually in her own favor, the balance being maintained by a constant inflow of stocks and bonds in the commercial enterprises of the countries with which she dealt. The United

States is now a creditor nation and has a substantial international trade balance in its favor. This excess of exports over imports cannot be liquidated by gold importation, nor would it help the United States agricultural or industrial enterprise if it were. Such a drain on foreign resources, if long continued, must injure the purchasing power of these markets.

The sale of foreign securities to American investors, on the other hand, not only means the liquidation of trade balances, but at the same time helps to improve conditions in foreign markets by placing funds in the hands of business firms which enable them to continue operations.

The West is particularly interested in this matter. Economists generally agree that the commercial empire of the future will be situated in the countries that line the great Pacific. On the other hand, today our agricultural products need entrance to the markets of Europe. Hence both for present and future needs active participation in the placing of these loans among citizens of the West is highly desirable.

Electrical Precautions in the Prevention of Fires

A WELL known authority on fires and their causes in industry and in the home states that ninety five per cent of fires, when under way, cannot be checked by water or chemicals until they have accomplished the maximum of their destructive effect. The great task, then, in the matter of saving the waste wrought by fire, is in its prevention.

Much has been done toward shielding the electrical industry from undue indictment in the matter of electrical cause of fires by seeing to it that newspapers tell the truth about fire causes. It has been too easy in the past to blame all unidentified fires to "defective wiring." Electrical leagues and other bodies devoted to the betterment of the electrical industry in the West have taken the matter up with the press, insisting upon investigation of fire causes, with the result that many a hasty judgment of former days has been shown to have been incorrect.

It is well that blame be laid where it belongs, and the electrical industry is to be congratulated upon the comparatively small percentages of fires that may be justly laid at its door. There is, however, much that the electrical industry can do to lessen even this small percentage thereby saving some millions of dollars annually from the waste heap of fire. Statistics show that shoddy, cheap work in the industrial plant and in the so-called "wire-your-home-yourself" type of home are much to blame in bringing discredit upon legitimate business.

Quality service is the safeguard of all in the electrical industry. Encouragement should be given to all those who are endeavoring to build up a business along these self respecting lines. Central station district managers can do much in this move by pointing out to prospective consumers and home builders those whom they can personally recommend as reliable to undertake the installation of electric wiring, both in the industrial plant and the home.

Western Comment on Current Events

Editorial Notes and Readers' Views on the Outstanding Aspects of Financing, Trade Promotion, Legislative and Associated Topics that have a Special Bearing on Western Business

Government Costs Increased Over 1910 State and National Taxes in Pacific Coast States Show Disproportionate Increase Over Population and Assessed Valuation

AN idea of the rapidly increasing costs of government is to be obtained from a glance at the proportionate increase over 1910 figures for the three items of population, assessed valuation and taxes in California, Washington and Oregon. Over a ten-year period, the figures recently given out are:

	Population Per Cent Increase	Assessed Valuation Per Cent Increase	Taxes Per Cent Increase
California	44.1	91.7	243.0
Oregon	16.4	23.2	244.0
Washington	18.8	32.3	140.6

This represents state taxes alone. During the same period, the population for the continental United States increased 15.4 per cent. National wealth, between the years 1912-1920 is estimated to have increased 86 per cent. The increase in total receipts, exclusive of postal revenue for the decade 1910-1920 was 891 per cent; for internal revenue, the figure reaches 1762.2 per cent. Customs revenue decreased 3 per cent, and income and excess profits taxes between the years 1914, when the income tax was first effective, and 1920 increased 5,443.3 per cent.

In the disproportionate increases shown by taxation over growth in income, these figures are startling as indicating the trend towards extravagance which prevails in all departments of government. Up to the time of the war national taxation was but a small factor in the entire burden, but for 1920 of the total of taxes paid in each of these western states, both federal and state, the percentages of internal revenue taxes were: in California, 37.0 per cent, in Oregon, 40.1 per cent and in Washington, 41.4 per cent. Over ninety per cent of these taxes go toward the payment of wars, past and present, and it is obvious that the best chance of their reduction lies with the disarmament conference now going on. In the matter of state government, action lies even closer home and should be the personal concern of every voter.

Improvement Shown in Metal Markets Higher Prices and Increased Sales Mark Past Two Months in Copper and Zinc Markets Following Recent Depression

THAT eastern capital is ready to enter the western mining field, in the belief that this industry will be the first to recover from the business depression, is

the statement of W. J. Loring, president of the A. I. M. E., who has recently returned to San Francisco from the American Mining Congress at Chicago. This is in accord with reports from Wall Street which indicate that prices on copper and zinc have shown a marked increase during the past two months. One authority on zinc is quoted by the Magazine of Wall Street as saying that the consumption of zinc in this country last month was approximately 5,500 pounds in excess of production. Copper exports have been constantly increasing in response to a growing demand from Germany and the campaign being conducted by the Copper and Brass Research Association in this country to increase the domestic consumption of copper is bringing results.

This word of improved conditions in the field of base metals is of especial importance to Arizona, Utah and Montana, where operations have been drastically curtailed. Butte mines have been practically idle for some time and reduction plants were operated on a 20 per cent basis, chiefly for the recovery of silver. Arizona and New Mexico have been on a somewhat better basis, with one mine active in the Miami district and various degrees of shut-down reported,—from 10 per cent of the normal number of men employed in the Ray and Hayden Districts to 45 per cent at Ajo. In Utah the proportion of men employed is perhaps not more than twenty per cent of normal. This depression in the basic industry of these regions has greatly affected the purchasing power and general prosperity of the Intermountain district and any improvement in the situation means much to the West.

Canal Freights Lower on Iron Pipe Engineering Material Shipped by Panama Route At Considerable Saving with Motor Truck Delivery at This End

MUCH of the material which enters into the construction of necessary facilities for the rapidly growing cities of the West is now being shipped from some point on the Atlantic seaboard through the Canal. When the final destination port is reached on the west coast, this material is loaded on motor trucks and hauled directly to the work under construction. This method has been followed out in the case of inland cities where the motor-transport could be used with a saving in warehouse storage and reduction in handling expense. At least two handlings are avoided and other savings from reduction in breakage or accidents seem to recommend this dis-

tribution system as one affording an opportunity for increased economy in the delivery of materials necessary for carrying on the great construction programs of the municipalities and the utility companies in the West.

In the case of cast iron pipe for city water mains in one western city the freight and haulage charges amount to more than 40 per cent of the F. O. B. foundry cost. Therefore any savings in transit or handling expense is an important factor in the cost of the construction work. While the study of such problems undoubtedly emphasizes the importance of the Panama Canal it also adds interest to the recent reports of the development of a big steel and iron industry on the west coast.

Western Ports Show Important Trade

U. S. Department of Commerce Figures Indicate Favorable Position of Western Ports in Handling Pacific Commerce

THE relative importance of various ports is pointed out by the Portland Chamber of Commerce in a recent compilation of figures from U. S. Department of Commerce sources. The following figures for foreign commerce cover the year ending June 30, 1921:

CITY		Imports Exports	1920 2543 Million Dollars	Percentage of Increase Over or Decrease Under Record for Previous Year.	
				Under	Over
New York.....	4,465,675,771	190	414	.28	
New Orleans.....	804,984,410	26	114	.04	
Galveston.....	576,699,331	35	150	.07	
Philadelphia.....	526,166,810	41	203	.21	
Baltimore.....	367,802,266	20	206	.07	
Boston.....	344,567,307	21	125	.53	
Norfolk.....	334,657,696	9	234		.41
San Francisco.....	303,535,005	14	154	.37	
Seattle.....	179,317,437	79	108	.55	
Tampa.....	140,435,353	16	127		.23
Port Arthur.....	136,964,525	13	134		.71
Savannah.....	100,619,961	26	72	.71	
Portland (Oregon).....	74,142,663	6	79		.49
Mobile.....	63,655,554	2	66	.32	
Los Angeles.....	29,445,464	9	79	.29	
Wilmington.....	24,059,474	10	12	.45	
Charleston.....	19,906,936	8	11	.57	

Two figures are of special western interest—the growth shown by the port of Portland and high position of San Francisco in the matter of imports. In general Pacific ports suffered the special depression which marked the past year in Oriental trade, but the volume of commerce handled, nevertheless, maintained its position of relative importance in the total of national business.

Unemployment Situation in California

Results of Comprehensive Survey Conducted by Commissioner of Labor Indicate 91,000 Unemployed as Total for State

RESULTS of a questionnaire on the unemployment situation sent out by J. P. McLaughlin, California Commissioner of Labor, to one thousand large manufacturing, trading or merchandising establishments and mining companies have been tabulated and the proportion of unemployment indicated applied to totals for that state, with the result that

an estimate of 60,000 idle workers above normal has been obtained. Figures are as follows:

Type of Industry	Number of Plants	Number Employed		Estimated Unemployed
		1920	1921	
Manufacturing	390	87,346	69,973	17,400
Canning and Packing	16,627	11,631	4,000
Sugar	6,413	4,233	2,160
Lumber	15,000	13,500	1,500
Shipbuilding	33,837	13,528	20,299

In the building trades there has been an increase of 18,000 since September of last year, due to lower wages and cost of material, with resultant increased building, represented by an increase in building permits of 11 per cent a year ago. It is further estimated that 1,000 workers have left the state.

Applying these figures to totals for the state gives 13,500 additional, and counting in the 30,000 unemployed which is the normal average even in the most prosperous times, a total of 83,000 is obtained. On November first, it is known from reports received, 8,000 were to have been dropped from manufacturing establishments, making the total unemployed at least 91,000.

This is a strikingly large figure, when compared to the total of 280,000 workers which is the total for the manufacturing establishments of the state. It indicates the extent of the western unemployment problem and the necessity for carrying out the major outlines of the program proposed by the Washington conference.

Business Papers Aid Nation's Revival

Important Role of the Business Press Pointed Out by the President of the McGraw-Hill Company at Chicago Meeting

IN a recent speech before the annual convention of the Associated Business Papers, at Chicago, James H. McGraw, president of the McGraw-Hill Company, analyzed the service of the business press to national prosperity. Following an outline of the economic conditions now facing both Europe and America, Mr. McGraw said in part:

The task of interpreting world conditions to American business is not an easy one, yet it is only part of the great job which American business paper editors and publishers must do. We must necessarily be concerned with the affairs of the world, but naturally our first responsibility is for our own country, for our own industrial, economic and social conditions.

War breeds extravagance. In spite of the noble ideals which inspired this nation to take up the great conflict across the seas, the inevitable result was the accumulation of innumerable wastes and habits of extravagance.

We are appalled when our attention is called to criminal wastes of life through accidents and negligence, the prodigal waste of our natural resources through underdevelopment or political chicanery, the prodigious waste of materials through mismanagement and inefficiency. But of all the wastes which affect our happiness and prosperity, the waste of time and human effort has the most damaging influence.

If the business papers collectively and individually can instil into the minds of the thinking men of industry the gospel of intelligent work, we will have performed a tremendous service.

It is evident then that the business papers need larger incomes. We need them not that our own pockets may be lined with profits but that we may turn back into American business a degree of service which in turn will be a fruitful developer of our industrial and commercial life.

We must be bulls on American business and not fear to make an investment in the affections and confidence of American business men.

At the conclusion of the session, Mr. McGraw was elected president of the organization.

Letters to the Editor

Hydroelectric Installation in Norway and Sweden Visited by Californian

To the Editor:

Sir: After forty-eight years of absence I had the pleasure of visiting my native Sweden during the past year. It is needless to say that I looked forward with keen expectancy to renewing boyhood acquaintances and to visiting with relatives whom I had not seen since my departure in 1873, shortly after my graduation from college.

Since the past eighteen years of my work have been with power companies in the San Joaquin valley of California, I was particularly interested in the electrical developments in both Sweden and Norway. I doubt if those interested in electrical development in the West realize the extent of the industry in those countries.

Of the many installations visited, the one at Trollhatten was exceedingly interesting. Trollhattan is the best known waterfall in Sweden and has been described in prose, verse and music and I expected that the beauty of the falls would be destroyed by construction of the power plant but found that such was not the case.

Trollhattan is an ideal place for generating electrical energy on a large scale with small outlay for installation. The minimum flow of the stream is 11,000 cu. ft. per second and maximum 36,000 cu. ft. per second. The static head is 110 ft. Development was done by the Swedish Government. Surveys and the purchase of land and other vested rights was commenced in 1901 but actual work was not started until 1906 and the first installation of 6-11,000-kw. units finished in 1910, the second—4 units of same capacity in 1914. The third—3 units 12,000-kw., has two double generators, one set delivering current at 25 cycles and the other 50 cycles. The machinery is all of Swedish make. The water wheels are of horizontal type with draft tubes about 16 ft. in diameter. The tubes leading to the water wheels are 14 ft. in diameter and about 185 ft. long imbedded in concrete or rock foundation.

The intake located at an island at the head of the falls is 236 ft. wide, calculated to deliver 12,000 cu. ft. per second (velocity 3 ft. per sec.). On the other side of the island are two regulating dams of the roller type each 65 ft. long, and 12 ft. in diameter. The piers are of first-class granite masonry and on the center pier is the figure of "Stromkarlen" (The God of the Stream) by the sculptor Eldh.

The big problem on hydro plants in Sweden is to keep ice away from the screens in front of the water wheel tubes. At this plant, they blasted two shafts each 60 ft. deep on one side of forebay and from bottom of shafts tunneled to stream. One side of the shafts are gates and in the forebay are shearbooms that divert the floating ice into the shafts. This however does not prevent slush ice from accumulating in front of the screens and here they heat the water by electrical energy and melt the ice.

The power house is 480 ft. long, 75 ft. wide. The total cost of the installation is 24 million kroner (about 6 million dollars). The transmission lines, 217 miles of 50,000 volts, 350 miles 20,000 volts and 430 miles of 10,000 volts cost about \$3,750,000. The power site is estimated at 15 million kroner and on this total (54 million kroner) the state earned 6.7% in 1919.

At the present time the demand for power had decreased and at the time I visited the plant they were only selling

65,000 kw. I was informed by the engineer that it was the intention to build several hundred miles of 130,000-volt transmission lines in order to create a bigger market, and to install two additional generating stations on same stream, each with 8-10,000-hp. vertical wheels and generators. These are low head installations and it is said that the water wheels will be the largest in the world. For the new 130,000-volt lines they propose to use what they call the "American System," i. e., the transformers and switches will be placed in the open.

Later I visited several other plants in Sweden and Norway. The Swedish plants all have comparatively low heads and large volume of water. In Norway high heads and small quantity of water.

EMIL NEWMAN, Consulting Engineer.

San Joaquin Light and Power Corporation.

Engineer Explains Consequences of Flood Year in California

To the Editor:

Sir: The readers of the Journal may be interested in the following reflections on what may happen when the seasonal rainfall in central portions of California reaches or exceeds the maximum which early California records show to be possible. A little conjecture on this subject may not be out of place.

In the great 1861-62 flood, for about three weeks, lands in the western portion of Stockton remained submerged and during this period, if reports of steamboat men are dependable, the rising or flood tides of the bay could not produce any up-stream current in the Straits of Carquinez. The entire delta area of the Sacramento and San Joaquin rivers was one continuous sheet of water. Excessive rains extended to the watersheds tributary to southern portions of the San Joaquin Valley. So much water was delivered into the Tulare basin by Kern River, Tule River, Kaweah River and King's River, and by the smaller streams between these rivers, that the lake surface rose about 16 ft. in a few months and the area of the lake was increased from about 350 to 750 sq. mi.

In the Sacramento valley, the flood-basins, which are now for the most part protected against inundation, were filled with water. Marysville, Sacramento and Stockton were flooded. But, of course, at that time the provisions that had been made for flood control were quite inadequate. There had been no other thought than that the waters should be confined to the river channels by levees, but the channels could not carry the flood volume and the levees were overtopped or breached. Conditions are now different, particularly in the Sacramento valley and in the delta regions, where the works of a comprehensive flood control project are nearing completion.

Reference to the rainfall records at San Francisco and Sacramento will give a fair idea of the character of the wet season which produced the great floods of 1861-62. The rainfall in the 12 months from July 1, 1861 to July 1, 1862 as shown by these records was about 102 per cent in excess of the normal rain in central portions of California. The other seasons in which precipitation has approached this record are 1852-53 with 76 per cent of rain in excess of normal, 1867-68 with 72 per cent of rain in excess of normal and 1889-90 with 90 per cent in excess of normal. But in none of these seasons except possibly in 1867-68 was the proportional excess of rain over normal as great in the San Joaquin valley and tributary watersheds as it was farther north.

The maximum stage to which the water of Tulare Lake rose in 1862, had also been attained in 1853 and was again reached in 1868. Since that time, there has been progressive but irregular shrinkage of the volume of the water in the lake which went completely dry in 1898 and again in more

recent years. There are no means at hand for predicting when the sequence of dry years will be broken. It may continue for many years longer; it may be broken this season or next year, or within the next five years. No one can tell.

Perhaps no better picture can be given of this situation than by reference to the rainfall, expressed in percentage of normal, as measured at the two stations, Sacramento and San Francisco since 1849. The figures indicate about what may be expected to occur in any part of the Sacramento or San Joaquin watersheds.

COMPOSITE OF RAINFALL RECORDS AT SAN FRANCISCO AND SACRAMENTO

In Percentage of Normal

Season	Rain in Per Cent	Season	Rain in Per Cent	Season	Rain in Per Cent
1849-50	168	1874-75	88	1898-99	77
50-51	29	75-76	127	99-00	94
51-52	88	76-77	46	1900-01	100
52-53	176	77-78	130	01-02	88
53-54	106	78-79	100	02-03	84
54-55	101	79-80	124	03-04	90
55-56	84	80-81	125	04-05	110
56-57	72	81-82	75	05-06	109
57-58	88	82-83	88	06-07	120
58-59	91	83-84	132	07-08	70
59-60	109	84-85	84	08-09	114
60-61	84	85-86	155	09-10	72
61-62	202	86-87	79	10-11	114
62-63	62	87-88	68	11-12	56
63-64	43	88-89	105	12-13	48
64-65	113	89-90	190	13-14	120
65-66	98	90-91	80	14-15	106
67-68	172	91-92	81	15-16	108
68-69	91	92-93	111	16-17	69
69-70	78	93-94	85	17-18	54
70-71	53	94-95	120	18-19	102
71-72	137	95-96	108	19-20	47
72-73	77	96-97	97	20-21	96
73-74	114	97-98	48		

It might be suspected from such a record as noted in the table, that the climate of California has changed and that there will be no more excessively wet years, were it not known that similar long periods without extreme flood conditions have occurred in the past. On the northeastern margin of Tulare Lake as it was in 1882, a group of willow tree stumps, some of which were 4 ft. in diameter, was found at an elevation about 20 ft. lower than the extreme high water of the lake. It would not have been possible for these trees to attain such growth if the lake had not, in some period preceding 1853 been at a low stage for many years in succession. Indian tradition, moreover, is said to refer to a time when the lake had contracted to two ponds with dry land in between.

In such facts as the foregoing, evidence is found that sometime there may again be a big lake in the Tulare basin; but there is consolation, too, in the knowledge that these facts show recurrence of extreme flood conditions to be generally at long intervals.

Should a winter with the extreme rainfall conditions, known to be possible, occur in the near future, floods would result which would probably raise the water in Stockton Slough at Stockton to elevations somewhat higher than the official street grades along the water front.

Breaches in the levees along the rivers of both San Joaquin and Sacramento valleys are then possible despite the provision which has been made to relieve the rivers of their surplus waters over relief weirs.

Valuable lessons will be learned from the next great flood, particularly because in the flood control project for the Sacramento River the usual procedure of providing retarding basins and cutting down the peak of the flood has been reversed. Some flood basins have been withdrawn from inundation in part, perhaps unwisely, and others have been reduced in area. The peak of the flood flow has been raised and provision for the larger flow has been and is being made by enlarging the lower Sacramento River.

C. E. GRUNSKY,
San Francisco. Consulting Engineer.

Radio Bulletins

The Journal of Electricity and Western Industry is sending out each week by radio-telephone a report on the outstanding engineering and industrial developments in the eleven western states, together with a concise review of business conditions in the principal cities in this district. The following excerpts are representative items taken from messages sent out.

San Francisco has been credited with a population of 676,164 in a survey made by T. F. Delury of the Pacific Telephone and Telegraph Company. The 1920 census figures were 506,676 while the new estimate is based on the number of telephones in service, the number of registered voters and the number of children in the city schools.

The California Railroad Commission has announced that the Southern California Edison Company will purchase the holdings of the Santa Barbara Electric Company.

Tacoma will have a gigantic Industrial Exposition opening on December 5. Electrical interests in Washington will be well represented.

The Kilbourne-Clark Manufacturing Company of Seattle, whose plant was recently purchased by the Westinghouse interests as a Northwest factory branch, will occupy a new factory which is being constructed at First avenue and Spokane street.

Radio merchandising is thoroughly discussed in the December first issue of the Journal of Electricity and Western Industry. This issue also contains a complete resume of the progress which has been made on the proposed Engineering and Industry Building which is to be erected in San Francisco. The building is assured as the result of a recent meeting of the Board of Regents and the Journal of Electricity and Western Industry is advocating that a similar undertaking be put under way in the principal cities of the West.

Unusual stimulation to the lumber industry will result in an announcement that freight rates east over the Western Pacific Railroad have been reduced ten per cent. Manufactured products such as doors, window sashes and similar mill products are included in the reduction.

Filings with the Utah state engineer indicate that plans are almost ready for the beginning of work on a vast irrigation system which will transform Sanpete and Juab counties from desert waste into many small farms.

Utah and California capitalists are considering a merger which will result in the formation of an iron, steel and coal corporation with \$25,000,000 capital. L. R. Rains of the Carbon Fuel Company of Salt Lake, made the announcement.

Approximately ten thousand people are daily visiting the California Industrial Exposition which is holding forth in the San Francisco Municipal Auditorium. Over 500 industries are represented.

The following is a review of business conditions in the principal western cities:

San Francisco: Retail trade has been quiet for the last week, although a large volume of holiday trade is expected. Freight rates and building materials, both of which have been reduced recently, are tending to stimulate business.

Seattle: Bank clearings, building permits, and real estate transfers are but slightly less than at this time last year, indicating that normalcy is almost reached. Cargo lumber business has increased while shipments by rail are less. Liquidation has eased credit.

Portland: Retail and jobbing trade is good. Farmers are holding wheat for higher prices although other grain is moving rapidly. The salmon market is more active, wool is firm while hides are quiet. Building is increasing.

Denver: Seasonal work decline has increased unemployment. Building is active while trade has been stimulated by the recent cold spell.

Salt Lake: Retail trade is reviving owing to the approaching holidays. The farmers continue to spend the money realized from the heavy crops. Unemployment is marked but not serious. Building is dull.

Los Angeles: November building permits are expected to reach \$10,000,000. Retail sales are constantly improving as are savings deposits. Eastern markets have absorbed almost all of the crops and there is but little in storage. Oil production and development have taken a jump upward.

Builders of the West

AWAY back in 1880 when Denver was a village of some 40,000 people and was not known as "The City of Lights," a young engineer came out from Cleveland to superintend the installation of the first street lighting system. This young man grew so fond of the mile-high city and the local electric company was so impressed with his ability that he was engaged as chief engineer on the spot.

Closely identified with all phases of commercial development of the region in which he has lived over all these years, William J. Barker, vice-president and general manager of the Denver Gas & Electric Light Co., stands out as one of the state's most progressive citizens.

Mr. Barker, who is English by birth, came to the United States as a young man with considerable technical education, and soon established himself in the electrical industry with the Brush Electric Company of Cleveland. The electric light plant, the installation of which brought Mr. Barker to Denver, supplies current for residence, street and commercial lighting, and was, according to engineers, the third one of its kind in the United States. Since his arrival he has seen the city of Denver grow from a population of 40,000 to 256,000, and his company develop from an isolated concern to a \$12,000,000 corporation which controls the gas, steam, electric light and power of the community. Today, partly as a result of his energy, Denver is known as the best lighted city in the world and its "movie row" has been mentioned by Thomas A. Edison as possessing the two best lighted blocks in America.

He has seen the city's horse cars replaced by trolleys and has assisted in the carrying of electricity to the rural districts. Aside from his connection with the Denver Gas & Electric Light Company, other power companies in Colorado are identified with his work. He is president of the Summit County Power Company, which maintains extensive service in western and part of northern Colorado and



WILLIAM J. BARKER

Who from the days of his first job installing the street lighting system of Denver to his present position as vice-president and general manager of the Denver Gas and Electric Light Company has consistently striven for the upbuilding of the Intermountain region and the West.

in several cities adjacent to Denver, and as vice-president of the Western Light and Power Co., which supplies power to most of northern Colorado, his interests reach into Wyoming and especially Cheyenne, the capital city of that state.

Mr. Barker, or "Bill" as he is known to most of the business men of Denver, is considered one of the best posted men on public utility information in Colorado. Advising the public, and selling utility securities for the extension of service, are part of his present-day activities. This closely associates him with the banking interests, both in a general way as well as with his own bank — The Hamilton National — of which he is a director.

He played an important part in the organization of The Denver Manufacturer's Association, which developed into the Colorado Manufacturers' Association, a closely allied organization representing over 300 interests ranging

from tin can to sugar manufacturing. Mr. Barker naturally enters into the civic activities of the city and is always one of the first to pledge his assistance and that of his employees to any cause for the advancement of Denver. He is a member of The Denver Civic and Commercial Association, and is president of The Denver Motor Club.

Mr. Barker believes that good-will publicity is the order of the day with the progressive utility, and to that end has endeavored, by his example, to perfect an organization whose watchwords are courtesy and service. He has placed his company squarely behind the Electrical Cooperative League in Denver and in the building of Denver's first modern electrical home he is serving as president of the incorporated company making possible its erection.

To William J. Barker, then, for his pioneering work in the electrical development of the Intermountain region and for his valiant service in matters of civic betterment, this issue of the Journal of Electricity and Western Industry is affectionately dedicated.



General view of the plant of the Washington Pulp and Paper Corporation, Port Angeles, Washington.

The Pacific Coast Affords Ideal Location for Paper Mill

Washington Plant in Addition to Having an Unlimited Supply of Raw Material, Rail and Water Transportation, and an Abundance of Power and Water, is Completely Electrified Throughout

By V. D. SIMONS
Consulting Engineer

IN locating a manufacturing plant the factors of primary consideration are the assurance of an abundant and readily available supply of raw material, the proximity of markets potentially able to absorb a sufficient supply of the manufactured product to enable economic production, sufficient power and water for immediate and future needs at reasonable rates, favorable climatic conditions and inviting environment which will promote efficient labor, and adequate transportation facilities.

The plant of the Washington Pulp and Paper Corporation, located at Port Angeles, Washington, in addition to fulfilling all of the above requirements is an outstanding example of the adaptation of electric power to the manifold requirements of industry. The site is within the city limits, fully cleared, well drained and is located at the lower end in a well protected area of the Port Angeles harbor, where the tracks of the Chicago, Milwaukee & St. Paul Railway serve the various parts of the plant and all ocean going vessels can dock at the company's wharf.

The Olympian Peninsula contains the largest remaining virgin forests in the United States, estimated at approximately ninety billion feet. Logs from various parts of Puget Sound as well as the inside passage of British Columbia can be delivered at the company's plant in tows. There is no place in the United States where more timber is available.

Aside from the unlimited timber supply, and rail and water transportation, a reliable supply of pure soft water is available for manufacturing purposes, fresh water pond for storage of logs, and plenty of good labor surrounded with the elements of home life, schools, churches, theatres, parks, and drives offered by small cities, and which unite in promoting good health, contentment and efficient service.

The company's site includes a sixty-acre fresh water pond for the storage of logs. The position and elevation of the pond is most favorable for the reception of logs coming in by rail or those towed from the Sound. This storage will eliminate the loss of logs due to sinking and from the ravages of teredos, which destroy them very rapidly when left in salt water.

Ample Power Requirements

The power requirements of the pulp and paper mill are supplied by the Northwest Power Company which has a 6000-kw. hydroelectric development about six miles from Port Angeles on the Elwha River. Additional turbines and generators are being installed, making the total capacity of the plant 12,000 kw. The Washington Pulp and Paper Corporation has a very favorable contract with this company for its present power requirements, and contemplated extensions.

The Northwest Power Company also has several undeveloped sites on the Elwha River, which will be developed and placed in commission as the demand for additional power is made apparent. The Elwha is the only large reliable power stream on the Olympian Peninsula—75,000 hp. being capable of development.

The plant consists of a five unit sixty-ton mechanical pulp mill, and a paper mill designed and built for two paper machine units. One unit is now installed and operating very satisfactorily. There are the usual auxiliary buildings and equipments, including wood preparing mill, steam plant, fuel storage, filter, docks, and monorail. All the major buildings, such as pulp mill, power house, beater and machine buildings, are of reinforced concrete construction. The roofs of the first two buildings mentioned are also concrete. The wood room fuel bin and dock are frame structures. The equipment

throughout the plant has been selected on records of past performances and installed with a view to securing maximum efficiency.

General Description of Equipment

A general outline of the equipment may be set forth as follows: The front end of the wood preparing plant resembles a saw mill inasmuch as there is a very heavy type of log haul or jack ladder. At the head of this log haul there is a log deck on each side supplied with massive steam kickers, log stops and loaders.

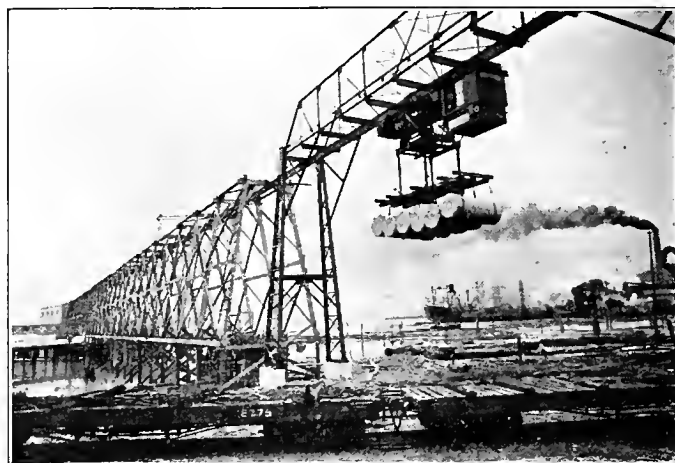
The logs are cut up into four-foot lengths with two 84-in. swing saws. The timber ranges from 15 to 84 in. in diameter and it is reduced to proper size with horizontal steam splitters. The refuse from the barkers and cull wood from splitters is conveyed to "hogs" and thence to fuel bins by means of a belt conveyor. The ground wood mill is equipped with five four-foot grinders. Each grinder is direct connected to a one thousand-hp. motor.

The stock from deckers drops directly into a storage tank having a capacity equal to thirty-six hours' operation of the pulp mill. Compressed air is used for the agitation in this tank. The slush stock is pumped from the storage tank to mixing beaters. A consistency regulator is attached to this line which introduces a measured quantity of water whenever the stock becomes too thick.

The monorail from the wood room extends through the grinder room into and through beater room and out to a deep water warehouse and dock. Sulphite is conveyed from the dock to the beater room and finished paper is delivered to the dock warehouse by this same means.

The main floors of grinder room and beater room are adjacent and at the same elevation. The beater room as well as machine room is constructed for a two-machine mill. There are four fifteen-hundred pound beaters, two of which are used for beating and preparing sulphite, the other two being used as mixers for slush ground wood and sulphite stock. The sulphite beaters are equipped with the recording hydraulic pressure regulators.

The machine dryers are equipped with a patent ejector system, which is of the closed type. Condensate is removed from dryers and returned direct to a closed hotwell in the steam power plant at a high temperature, resulting in a material saving of fuel. Probably no other news print paper mill uses as small an amount of steam in the drying of paper.

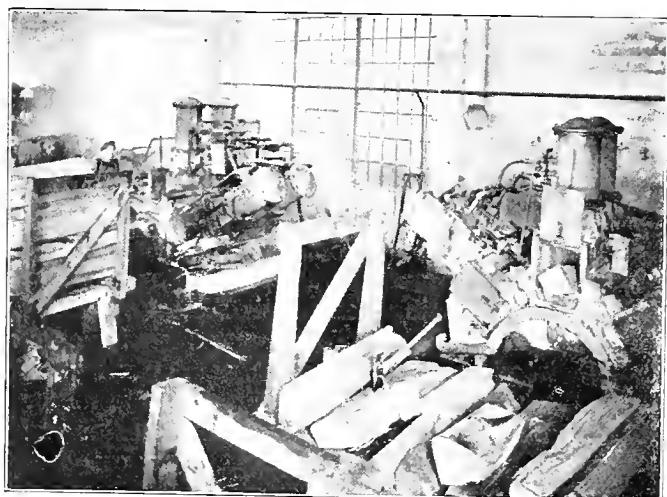


Finished paper is conveyed from plant to the dock warehouse by the monorail system, six rolls being the usual load

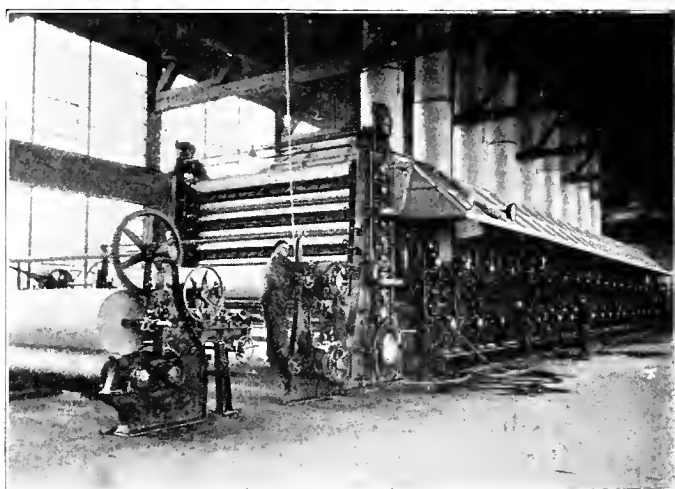
Space for a future machine is at present being used for the finishing and storage of rolls. Finished rolls are conveyed from the beater room to the warehouse on the dock over a monorail system. The dock is of ample size and the water is of sufficient depth to berth ocean-going liners for shipment of the finished product.

As it is necessary to generate steam for the drying of paper a modern boiler installation has been provided for this purpose. Provision has been made for oil burners, coal stokers and hog fuel furnaces which may be operated independently or in combination.

The electrification of the entire mill has been carefully worked out. Westinghouse motors and accessories have been installed throughout the plant. This part of the equipment is also modern in every respect.



Each of the three-pocket Montague pulp grinders, five in all, is driven by a 1000-hp., 240-r.p.m. synchronous motor



The Bagley-Sewell paper machine shown above is designed to operate up to a speed of 700 ft. per minute

Recent Good Will Advertising by Western Power Companies

Extensive Publicity Plans Directed Toward the Bettering of Public Relations
Reported by Western Power Companies in Response to a Survey Conducted
by the Journal of Electricity and Western Industry

MAINTEENANCE of satisfactory public relations has long been looked upon as one of the primary safeguards of the public service industry. Utility Commission regulation in the end is dependent upon public support, as is also the reasonable attitude of state legislatures, in whose hands lies the fate of much annually recurring pernicious legislation.

To what extent western power companies are devoting advertising space to the bringing about of these better relations was the object of a survey recently conducted by the Journal of Electricity and Western Industry among forty companies of this district. Of the twenty-five replies received, six companies had carried on no good will advertising within recent months, three contemplated initiating campaigns within the coming year and seven reported use of N. E. L. A. advertising or that furnished by manufacturing companies.

Eleven companies had carried on campaigns, more or less extensive, varying in scope from short statements of the company's policies on bill stubs to general distribution of the company's house organ and regular newspaper advertising.

The Montana Power Company's recent good will campaign is perhaps as well known as any of this type of advertising. During the year 1920, this company ran a series of nine full-page advertisements in 220 newspapers throughout the state. These ran under the titles:

More Light, Less Heat.
Capital Requirements.
The Big Customer.
Rates.
Taxes.
Is It a Monopoly?
Consolidation and the Common Good.
Government Control of Water Powers.
Public Relations.

Following the campaign the company asked for impressions from the various newspapers which had run the advertisements as to their effect on public opinion. Although some few returns were unfavorable, the vast majority indicated such interest and widespread bettering of public favor that the company felt justified in continuing the campaign with a new series of advertisements which have been running during the past year. These run under the title "Her Majesty, Montana" and feature the natural resources and industries of the state in their relation to electric service. An outline map of Montana forms the framework for the story which appears under the following heads:

Let's Boost the Treasure State.
The Treasure State.
Mineral Wealth.
Per Capita Production.
1909-1918 Average Bushels Per Acre.
1908-1920 Average Per Acre Yield Field Crops.
1920 Production of Livestock and Products.

The Central Arizona Power Company has run a somewhat similar series which has been issued in booklet form under the title "The Good Citizen and the Public Utility." An idea of the scope of the treatise may be gained from the chapter headings.

Chap. 1. The Good Citizen and the Public Utility.
Chap. 2. The Heart of Life in an American City.
Chap. 3. The Monopoly.
Chap. 4. How Public Utilities are Regulated.
Chap. 5. Regulation Yesterday and Today.
Chap. 6. Electric Rates in Phoenix.
Chap. 7. The Cost of Gas Production.
Chap. 8. Electricity and Gas Service in Phoenix.
Chap. 9. The Price of Continuous Service.
Chap. 10. The Financing of Public Utilities.
Chap. 11. In Conclusion.

The booklet is admirably carried out in simple language and particularly carries the point of the safeguards of utility regulation, making the appeal for public support on the grounds of good service.

The Pacific Gas and Electric Company has devoted considerable advertising space to good will appeals during the past year. For several weeks a series of short essays, simply illustrated, was run throughout the company's territory. These were taken from Mr. Creed's pamphlet of articles entitled "That the Public May Know" and covered such subjects as Public Service Rates, The Role of Power in Industrial Development, Public Ownership, Public Service Policies, Who Owns the Public Utilities, and Doing the Job at Cost. Following this series, a number of historical advertisements have been run, showing how the Pacific Gas and Electric Company has made history in the upbuilding of the electrical industry through the development of hydroelectric power. These open with the very beginning of hydroelectric power twenty-six years ago and will, when completed, run up to the present day.

The San Joaquin Light and Power Corporation for some time centered their good will advertising in a series of heart-to-heart talks, filling a half-page in local newspapers, labelled "Personal But Not Confidential." These were signed by A. G. Wishon and discussed problems of local interest with special reference to the stock issue being floated by the company at the time. At the present time a weekly advertisement is maintained with change of copy each week. Stock sales cards are framed over the "consumers' desk" in district offices and run in the street cars. Some of these advertisements refer simply to the sale of company stock, while others have a direct good will appeal. Of this type were the invitation to the recent opening of the Kern River Power House, announcement of moving pictures and an open meeting at the school house and similar personal appeals.

The Southern California Edison Company has carried on a comprehensive campaign of advertising and personal contact. The "Greater Service" de-

CALIFORNIA HISTORY

The Story of
Mining a River Through
the Heart of the State
for the Development
of Industrial Civilization

PIONEERING

All last winter behind fifteen miles of impassable
swamp, now drained 30 feet deep, a gang of Edison
men were toiling. Only a team of oxen at
times could be used, and the wheels of the
machine were turned by hand.

On August 11th they saw the result of their labor.
They broke through the swamp, and the
great hydroelectric power plant, No. 1, at
the junction of the San Joaquin River and Big River
was born.

Three and a half miles of tunnel had been bored
through solid granite, bringing 17,000 h.p. from
Humboldt Lake, where the water flows down
the canyon to the sea.

From had Southern California Edison Company,
California's greatest electric utility, achieved the
impossible, up to the 100th floor in Fresno for the
power requirements of its customers in Los Angeles
and Southern California.

**SOUTHERN CALIFORNIA
EDISON COMPANY**
Edison Building
Los Angeles, California



Pioneers in Power Production

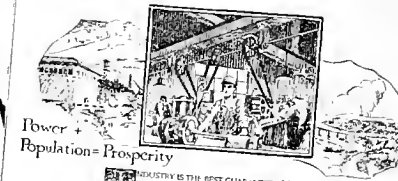
At Folsom, California, on the American River, is the oldest of the country's
hydroelectric power plants now owned and operated by the Pacific
Gas and Electric Company.

It was completed in April, 1911, and took to place among the very first plants
in the world to use the definite transmission of electric energy.

It was a great day for California when, on August 11th of that year, the
little river, now known as the Folsom River, began sending out its precious
energy to a vast power plant in the heart of the State.

The Folsom plant is still an integral part of the Pacific Gas and Electric
Company's system, but as the years have passed, it has been joined by greater
plants, and the little river has become a great power source for the entire
State.

This law will establish a World's record for high voltage and carrying
capacity.



Power + Population = Prosperity

INDUSTRY IS THE BEST GUARANTEE of the permanence and prosperity of
a community, a state or a nation. It means creation of wealth, profitable
employment, and free flow of capital in trade.

From factors of industrial development, here of all factors, production and power are indispensable. Power
modern times, in great industrial centers, has been the result of the power of the
nation.

The power of the nation, while not essential, is a great stimulus to the development of
industry. It is the power of the nation that has made possible the great
achievement of the modern world.

California has in the last few years made a great gain in population. In addition a powerful source of the
power of the nation, while not essential, is a great stimulus to the development of
industry.

There is no danger power could be used for evil. The power of the nation, while not essential, is a great stimulus to the development of
industry.

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industry.

A Local Investment to Help Home Prosperity

**\$1,000,000
8 Per Cent Five-Year Gold Notes
Portland Railway, Light and Power Company**
Total \$1,000,000, 1915-1920, 1920-1925, 1925-1930, 1930-1935, 1935-1940, 1940-1945, 1945-1950, 1950-1955, 1955-1960, 1960-1965, 1965-1970, 1970-1975, 1975-1980, 1980-1985, 1985-1990, 1990-1995, 1995-2000, 2000-2005, 2005-2010, 2010-2015, 2015-2020, 2020-2025, 2025-2030, 2030-2035, 2035-2040, 2040-2045, 2045-2050, 2050-2055, 2055-2060, 2060-2065, 2065-2070, 2070-2075, 2075-2080, 2080-2085, 2085-2090, 2090-2095, 2095-2100, 2100-2105, 2105-2110, 2110-2115, 2115-2120, 2120-2125, 2125-2130, 2130-2135, 2135-2140, 2140-2145, 2145-2150, 2150-2155, 2155-2160, 2160-2165, 2165-2170, 2170-2175, 2175-2180, 2180-2185, 2185-2190, 2190-2195, 2195-2200, 2200-2205, 2205-2210, 2210-2215, 2215-2220, 2220-2225, 2225-2230, 2230-2235, 2235-2240, 2240-2245, 2245-2250, 2250-2255, 2255-2260, 2260-2265, 2265-2270, 2270-2275, 2275-2280, 2280-2285, 2285-2290, 2290-2295, 2295-2300, 2300-2305, 2305-2310, 2310-2315, 2315-2320, 2320-2325, 2325-2330, 2330-2335, 2335-2340, 2340-2345, 2345-2350, 2350-2355, 2355-2360, 2360-2365, 2365-2370, 2370-2375, 2375-2380, 2380-2385, 2385-2390, 2390-2395, 2395-2400, 2400-2405, 2405-2410, 2410-2415, 2415-2420, 2420-2425, 2425-2430, 2430-2435, 2435-2440, 2440-2445, 2445-2450, 2450-2455, 2455-2460, 2460-2465, 2465-2470, 2470-2475, 2475-2480, 2480-2485, 2485-2490, 2490-2495, 2495-2500, 2500-2505, 2505-2510, 2510-2515, 2515-2520, 2520-2525, 2525-2530, 2530-2535, 2535-2540, 2540-2545, 2545-2550, 2550-2555, 2555-2560, 2560-2565, 2565-2570, 2570-2575, 2575-2580, 2580-2585, 2585-2590, 2590-2595, 2595-2600, 2600-2605, 2605-2610, 2610-2615, 2615-2620, 2620-2625, 2625-2630, 2630-2635, 2635-2640, 2640-2645, 2645-2650, 2650-2655, 2655-2660, 2660-2665, 2665-2670, 2670-2675, 2675-2680, 2680-2685, 2685-2690, 2690-2695, 2695-2700, 2700-2705, 2705-2710, 2710-2715, 2715-2720, 2720-2725, 2725-2730, 2730-2735, 2735-2740, 2740-2745, 2745-2750, 2750-2755, 2755-2760, 2760-2765, 2765-2770, 2770-2775, 2775-2780, 2780-2785, 2785-2790, 2790-2795, 2795-2800, 2800-2805, 2805-2810, 2810-2815, 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3270-3275, 3275-3280, 3280-3285, 3285-3290, 3290-3295, 3295-3300, 3300-3305, 3305-3310, 3310-3315, 3315-3320, 3320-3325, 3325-3330, 3330-3335, 3335-3340, 3340-3345, 3345-3350, 3350-3355, 3355-3360, 3360-3365, 3365-3370, 3370-3375, 3375-3380, 3380-3385, 3385-3390, 3390-3395, 3395-3400, 3400-3405, 3405-3410, 3410-3415, 3415-3420, 3420-3425, 3425-3430, 3430-3435, 3435-3440, 3440-3445, 3445-3450, 3450-3455, 3455-3460, 3460-3465, 3465-3470, 3470-3475, 3475-3480, 3480-3485, 3485-3490, 3490-3495, 3495-3500, 3500-3505, 3505-3510, 3510-3515, 3515-3520, 3520-3525, 3525-3530, 3530-3535, 3535-3540, 3540-3545, 3545-3550, 3550-3555, 3555-3560, 3560-3565, 3565-3570, 3570-3575, 3575-3580, 3580-3585, 3585-3590, 3590-3595, 3595-3600, 3600-3605, 3605-3610, 3610-3615, 3615-3620, 3620-3625, 3625-3630, 3630-3635, 3635-3640, 3640-3645, 3645-3650, 3650-3655, 3655-3660, 3660-3665, 3665-3670, 3670-3675, 3675-3680, 3680-3685, 3685-3690, 3690-3695, 3695-3700, 3700-3705, 3705-3710, 3710-3715, 3715-3720, 3720-3725, 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4180-4185, 4185-4190, 4190-4195, 4195-4200, 4200-4205, 4205-4210, 4210-4215, 4215-4220, 4220-4225, 4225-4230, 4230-4235, 4235-4240, 4240-4245, 4245-4250, 4250-4255, 4255-4260, 4260-4265, 4265-4270, 4270-4275, 4275-4280, 4280-4285, 4285-4290, 4290-4295, 4295-4300, 4300-4305, 4305-4310, 4310-4315, 4315-4320, 4320-4325, 4325-4330, 4330-4335, 4335-4340, 4340-4345, 4345-4350, 4350-4355, 4355-4360, 4360-4365, 4365-4370, 4370-4375, 4375-4380, 4380-4385, 4385-4390, 4390-4395, 4395-4400, 4400-4405, 4405-4410, 4410-4415, 4415-4420, 4420-4425, 4425-4430, 4430-4435, 4435-4440, 4440-4445, 4445-4450, 4450-4455, 4455-4460, 4460-4465, 4465-4470, 4470-4475, 4475-4480, 4480-4485, 4485-4490, 4490-4495, 4495-4500, 4500-4505, 4505-4510, 4510-4515, 4515-4520, 4520-4525, 4525-4530, 4530-4535, 4535-4540, 4540-4545, 4545-4550, 4550-4555, 4555-4560, 4560-4565, 4565-4570, 4570-4575, 4575-4580, 4580-4585, 4585-4590, 4590-4595, 4595-4600, 4600-4605, 4605-4610, 4610-4615, 4615-4620, 4620-4625, 4625-4630, 4630-4635, 4635-4640, 4640-4645, 4645-4650, 4650-4655, 4655-4660, 4660-4665, 4665-4670, 4670-4675, 4675-4680, 4680-4685, 4685-4690, 4690-4695, 4695-4700, 4700-4705, 4705-4710, 4710-4715, 4715-4720, 4720-4725, 4725-4730, 4730-4735, 4735-4740, 4740-4745, 4745-4750, 4750-4755, 4755-4760, 4760-4765, 4765-4770, 4770-4775, 4775-4780, 4780-4785, 4785-4790, 4790-4795, 4795-4800, 4800-4805, 4805-4810, 4810-4815, 4815-4820, 4820-4825, 4825-4830, 4830-4835, 4835-4840, 4840-4845, 4845-4850, 4850-4855, 4855-4860, 4860-4865, 4865-4870, 4870-4875, 4875-4880, 4880-4885, 4885-4890, 4890-4895, 4895-4900, 4900-4905, 4905-4910, 4910-4915, 4915-4920, 4920-4925, 4925-4930, 4930-4935, 4935-4940, 4940-4945, 4945-4950, 4950-4955, 4955-4960, 4960-4965, 4965-4970, 4970-4975, 4975-4980, 4980-4985, 4985-4990, 4990-4995, 4995-5000, 5000-5005, 5005-5010, 5010-5015, 5015-5020, 5020-5025, 5025-5030, 5030-5035, 5035-5040, 5040-5045, 5045-5050, 5050-5055, 5055-5060, 5060-5065, 5065-5070, 5070-5075, 5075-5080, 5080-5085, 5085-5090, 5090-5095, 5095-5100, 5100-5105, 5105-5110, 5110-5115, 5115-5120, 5120-5125, 5125-5130, 5130-5135, 5135-5140, 5140-5145, 5145-5150, 5150-5155, 5155-5160, 5160-5165, 5165-5170, 5170-5175, 5175-5180, 5180-5185, 5185-5190, 5190-5195, 5195-5200, 5200-5205, 5205-5210, 5210-5215, 5215-5220, 5220-5225, 5225-5230, 5230-5235, 5235-5240, 5240-5245, 5245-5250, 5250-5255, 5255-5260, 5260-5265, 5265-5270, 5270-5275, 5275-5280, 5280-5285, 5285-5290, 5290-5295, 5295-5300, 5300-5305, 5305-5310, 5310-5315, 5315-5320, 5320-5325, 5325-5330, 5330-5335, 5335-5340, 5340-5345, 5345-5350, 5350-5355, 5355-5360, 5360-5365, 5365-5370, 5370-5375, 5375-5380, 5380-5385, 5385-5390, 5390-5395, 5395-5400, 5400-5405, 5405-5410, 5410-5415, 5415-5420, 5420-5425, 5425-5430, 5430-5435, 5435-5440, 5440-5445, 5445-5450, 5450-5455, 5455-5460, 5460-5465, 5465-5470, 5470-5475, 5475-5480, 5480-5485, 5485-5490, 5490-5495, 5495-5500, 5500-5505, 5505-5510, 5510-5515, 5515-5520, 5520-5525, 5525-5530, 5530-5535, 5535-5540, 5540-5545, 5545-5550, 5550-5555, 5555-5560, 5560-5565, 5565-5570, 5570-5575, 5575-5580, 5580-5585, 5585-5590, 5590-5595, 5595-5600, 5600-5605, 5605-5610, 5610-5615, 5615-5620, 5620-5625, 5625-5630, 5630-5635, 5635-5640, 5640-5645, 5645-5650, 5650-5655, 5655-5660, 5660-5665, 5665-5670, 5670-5675, 5675-5680, 5680-5685, 5685-5690, 5690-5695, 5695-5700, 5700-5705, 5705-5710, 5710-5715, 5715-5720, 5720-5725, 5725-5730, 5730-5735, 5735-5740, 5740-5745, 5745-5750, 5750-5755, 5755-5760, 5760-5765, 5765-5770, 5770-5775, 5775-5780, 5780-5785, 5785-5790, 5790-5795, 5795-5800, 5800-5805, 5805-5810, 5810-5815, 5815-5820, 5820-5825, 5825-5830, 5830-5835, 5835-5840, 5840-5845, 5845-5850, 5850-5855, 5855-5860, 5860-5865, 5865-5870, 5870-5875, 5875-5880, 5880-5885, 5885-5890, 5890-5895, 5895-5900, 5900-5905, 5905-5910, 5910-5915, 5915-5920, 5920-5925, 5925-5930, 5930-5935, 5935-5940, 5940-5945, 5945-5950, 5950-5955, 5955-5960, 5960-5965, 5965-5970, 5970-5975, 5975-5980, 5980-5985, 5985-5990, 5990-5995, 5995-6000, 6000-6005, 6005-6010, 6010-6015, 6015-6020, 6020-6025, 6025-6030, 6030-6035, 6035-6040, 6040-6045, 6045-6050, 6050-6055, 6055-6060, 6060-6065, 6065-6070, 6070-6075, 6075-6080, 6080-6085, 6085-6090, 6090-6095, 6095-6100, 6100-6105, 6105-6110, 6110-6115, 6115-6120, 6120-6125, 6125-6130, 6130-6135, 6135-6140, 6140-6145, 6145-6150, 6150-6155, 6155-6160, 6160-6165, 6165-6170, 6170-6175, 6175-6180, 6180-6185, 6185-6190, 6190-6195, 6195-6200, 6200-6205, 6205-6210, 6210-6215, 6215-6220, 6220-6225, 6225-6230, 6230-6235, 6235-6240, 6240-6245, 6245-6250, 6250-6255, 6255-6260, 6260-6265, 6265-6270, 6270-6275, 6275-6280, 6280-6285, 6285-6290, 6290-6295, 6295-6300, 6300-6305, 6305-6310, 6310-6315, 6315-6320, 6320-6325, 6325-6330, 6330-6335, 6335-6340, 6340-6345, 6345-6350, 6350-6355, 6355-6360, 6360-6365, 6365-6370, 6370-6375, 6375-6380, 6380-6385, 6385-6390, 6390-6395, 6395-6400, 6400-6405, 6405-6410, 6410-6415, 6415-6420, 6420-6425, 6425-6430, 6430-6435, 6435-6440, 6440-6445, 6445-6450, 6450-6455, 6455-6460, 6460-6465, 6465-6470, 6470-6475, 6475-6480, 6480-6485, 6485-6490, 6490-6495, 6495-6500, 6500-6505, 6505-6510, 651

partment, established in order to bring a personal contact between the company and its customers, is directly aimed at the bettering of public relations. In addition to this individual relationship, the company has carried generous advertising space throughout their territory. Among the topics to which advertising space has been devoted are:

Pioneering.
Cooperation.
Research.
California's Development.
Who Is the Southern California Edison Company?
Greater Service.
Public Ownership.
Efficient Operation.
To Our Visiting Bankers.

The Southern Sierras Power Company has run a series of open letters in all newspapers in territory reached by their lines, addressed to the people of the town in question and signed by A. B. West, vice-president and general manager of the company. The first of these letters discusses the position of the power company as a home institution, the second takes up the problem of municipal power development and the third customer ownership under the title "The Better Form of Public Ownership."

Of the remaining California companies, **The San Diego Consolidated Gas and Electric Company** has run several advertisements in local papers on the theme of public relations, but has conducted no general campaign along these lines. **The California Oregon Power Company** relies almost entirely upon its little house organ "The Volt" for this type of contact. This four-page bulletin has been published monthly by the company since July, 1920, and now boasts a distribution of 10,500. It is intended primarily for the employees and the users of "Copco" power, but its mailing list has been extended to many outsiders in all parts of the United States. The articles each month deal with some phase of the company's service to the industries of its district.

In the Northwest, the **Puget Sound Light and Power Company** has associated most of its advertising with the two sales of company securities which were successfully carried out during 1920-1921. In this connection, it is pointed out that the unsolicited publicity given by the newspapers in financial and other pages during such a campaign is of the utmost good will value. Aside from these two campaigns, the company has run advertisements showing a chart of the company's resources, with data calculated to counteract any thought of a possible power shortage. This chart was later enlarged, framed and surrounded by reproductions of the company's plants to be used as an exhibit at agricultural and manufacturing shows.

The Portland Railway, Light and Power Company has confined most of its advertising to sale of company stock, but much of this copy has direct good will appeal and all of it, of course, is intended indirectly to better public relations. Fifteen of the advertisements which appeared in local newspapers at the time have been gathered together in pamphlet form under the title "For Home Industry." A glance at the subject matter of these gives an idea of the scope of the series:

1. Announcement.
2. Your Opportunity to Invest Safely.
3. Now Is the Right Time to Invest Your Money.
4. Some Impressive Facts About This Company.
5. A Local Investment to Help Home Prosperity.
6. This Investment Pays a High Rate of Interest.
7. Portland and Oregon Must Not Stand Still.
8. Let's Keep Our Money at Home.
9. Keep "Oregon Made" Dollars Working for Home Prosperity.
10. 16 Reasons Why the 8% Gold Notes of This Company Are a Good Investment.
11. Two Incomes Are Better Than One.
12. The Tide of Thrift Leads On to Fortune.
13. Notes Nearly All Sold.
14. Going Fast.
15. Home Industry Has Scored a Triumph.

The North Coast Power Company with headquarters in Portland makes effective use of bill stubs to tell its story to customers. Events of interest from the standpoint of their bearing on public utility relations or quotations from speeches which the company wishes to call to the attention of its customers are reproduced on that portion of the bill which remains in the customer's hands.

The correcting of local impressions that its rates are high, is the object of a series of advertisements now being run by the **British Columbia Electric Railway Company**, Vancouver, B. C. During the last year or more the company has been advertising to increase its lighting business and results have proved the value of such procedure. It was evident, however, that there was still a feeling abroad that its rates for light, power and gas were high, which feeling was nullifying the effect of its advertising.

The series as far as it has gone, follows:

- No. 1. Vancouver has the lowest gas rates of any city in Canada using manufactured gas excepting only Montreal and London.
- No. 2. Vancouver has gas for industries as low as 70 cents per thousand, and for heating at 75 cents per thousand.
- No. 3. Vancouver's lighting rate is 6 cents. Only Winnipeg, Ottawa, the Twin Cities, and cities served with Niagara power have lower.
- No. 4. Vancouver's domestic lighting cost has dropped 40 per cent since 1917.
- No. 5. Vancouver has electric power rates for large quantities as low as 8/10 of a cent per kw-hr.
- No. 6. Of 139 cities of 50,000 population or more on this continent, only 10 have lower lighting rates than Vancouver.
- No. 7. Vancouver's ornamental lighting costs only 2 cents per kilowatt-hour—half what Seattle's municipal plant charges itself.
- No. 8. Vancouver gets lighting current today at one-third the rate in 1897. At one-third the cost, tungsten lamps give 3½ times the light of carbon lamps in 1897.
- No. 9. In Vancouver the average monthly electric light bill is less than the average person spends for a single night's amusement.
- No. 10. In Vancouver you can operate your electric iron 16 minutes for only 1 cent; your hot pad for nearly one hour for the same amount.
- No. 11. Candles or coal oil used to cost the average household \$22 a year. At no increase in cost, the same family uses 18 times the light from electricity.
- No. 12. At 6 cents a kilowatt-hour, a 25-watt porch light will cost you only one-sixth of a cent an hour—less than a cent an evening.

It is felt that when the public grasps the cheapness of electric current, one of the deterrents to the use of more light and to the sale of more electric appliances will be removed.

Proposed Western Home for Engineering and Industry

An Outline of a Movement that has Started in San Francisco which will Culminate in a Monument to Engineering Vision in the West and Furnish a Home for Engineering and Industrial Effort

By ROBERT SIBLEY

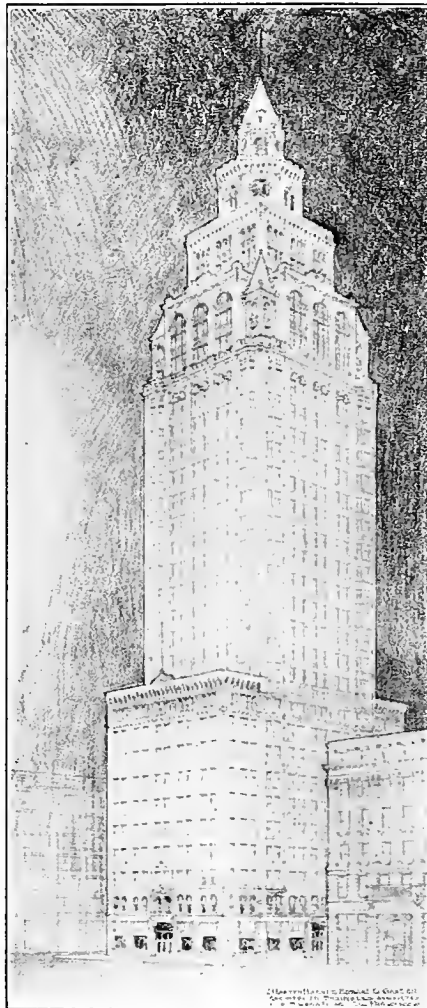
Editor, Journal of Electricity and Western Industry

IN spite of the business depression that still seems to envelop the nation as a whole, the West maintains its steady advance in engineering and industrial development. In California particularly the influx of population, the growth in agriculture and the harnessing of water power has continued to such an extent that census statistics just issued from Washington place this state, which has hitherto largely been regarded as agricultural, as eighth on the list in value of manufactured products and fifth of all the states in the union in number of manufacturing plants.

In view of this ever increasing rise in engineering and industrial effort, men of big vision in the West have long held in view a high ideal of attainment in the way of a home for engineering and industry, which will culminate in a monument that will endure for all time and yet serve the useful function of a meeting place, commodious and dignified, as well as a headquarters for business and industrial organizations closely allied to the engineering professions.

The movement some weeks ago received concrete expression when the San Francisco Electrical Development League expressed itself as favoring the project and in a magnificent burst of enthusiasm decided to invite all other organizations interested to participate equally in the planning of the project and bring about its early fruition. As a result of this action the entire project has been put in the hands of a thoroughly representative Board of Regents and sufficient funds entrusted to their care to secure the fullest information possible concerning its feasibility. On November 17, 1921, after many weeks of preliminary investigation, the Board of Regents, with practically every member in attendance, unanimously decided to put the project to a triumphant completion.

The movement is one that might well be extended to other metropolitan districts in the West. Heretofore the eastern branches of the various engi-



An architect's drawing of one of the many ideas that have been proposed as a home for the Engineering and Industry Building in San Francisco. The creation of a civic center for engineering and industry in the West by the building of this magnificent structure merits the earnest and enthusiastic support of all well wishers of the West, for it will stand as the eternal sentinel by the Golden Gate, ever watching and protecting the engineering and industrial activity of an empire in the making.

neering bodies have had the benefit of a similar building in New York. The proposed building will no doubt serve a similar purpose on the Pacific Coast. The idea has already been considered in other western cities, and with the successful completion of the San Francisco building plans to concentrate the engineering and allied industries of these cities will no doubt be promulgated. It is to be hoped that the starting of the movement in San Francisco will furnish the stimulus that will result in the erection of a group of imposing buildings dedicated to the engineering and industrial activity of an empire in the making.

Several different methods of finance have been proposed for the building. The one which seems most popular at present is to raise by subscription the sum of \$600,000. With this sum as a stock investment no difficulty is anticipated in securing an additional \$1,400,000 on bonds issued with the full property as security. Assuming a basis of \$300,000 as a stock investment upon which the transaction would be capitalized and the raising of \$1,700,000 in bonds, details of probable profits have been worked out by the architectural firm of Haenke and Garden of San Francisco. To interpret the following figures on the basis of \$600,000 stock investment and \$1,400,000 in bonds, a

slight readjustment would be necessary. However, it is believed that the following figures on the former basis of computation, namely, \$300,000 stock and \$1,700,000 bonds, indicate quite clearly the general values involved in estimating the probable revenue from the building. The assumption in height of the building and its general proportions are only tentative as the final location of the building site will be the determining factor in this regard. The building will compare favorably with the highest type of business structures in the country, occupying a prominent place in San Francisco's skyline. A reasonable idea of the general returns may be ascertained by studying the following figures:

ESTIMATED REVENUE, PROPOSED ENGINEERING AND INDUSTRY BUILDING, SAN FRANCISCO, CAL.

Cost of Land	\$ 100,000
Cost of Building	1,900,000
Total Investment	2,000,000
Commission Stock Paid Up.....	300,000
Loan	\$1,700,000
Income	
First floor area 7735 sq. ft. @ \$4,000 per mo. Per year.....	\$ 48,000
Basement area 8000 sq. ft. @ \$1,000 per mo. Per year.....	12,000
Upper Floors	
9 floors @ 6787 sq. ft. per floor—	
Total area 61083 sq. ft. @ 20c. per ft. per mo. \$ 12,216	
13 floors @ 4106 sq. ft. per floor—	
Total area 53378 sq. ft. @ 20c. per ft. per mo. 10,677	
3 floors @ 3700 sq. ft. per floor—	
Total area 11100 sq. ft. @ 20c. per ft. per mo. 2,220	
3 floors @ 1550 sq. ft. per floor—	
Total area 4650 sq. ft. @ 20c. per ft. per mo. 930	
Income per month.....	\$ 26,043 yr. 312,516
Gross Income per year.....	372,516
Expenditures	
Interest on Loan of \$1,700,000 @ 7%.....	\$119,000
Insurance	7,500
Taxes	30,000
Operation	55,000
Total Expenditures	211,500
Net Income per year.....	161,016
To Amortization of Loan in less than 10 yr. period.....	110,000
Balance to apply for Incidental Vacancies and Dividends	\$ 51,016

The wide interest which is being manifested in the proposed Engineering and Industry Building for San Francisco has led the Board of Regents in charge of the enterprise to issue the following statement:

1. Complete organization has been effected by the Board of Regents.

2. Money to finance the preliminary investigation has been contributed or promised by the following:

Electrical Development League	\$150.00
San Francisco Engineers' Club.....	150.00
American Society of Mechanical Engineers.....	75.00
American Institute of Electrical Engineers.....	75.00
American Institute of Mining and Metallurgical Engineers.....	75.00
American Chemical Society	40.00
American Society of Civil Engineers.....	75.00
San Francisco Chapter, American Association of Engineers.....	25.00
California Association of Electrical Contractors and Dealers.....	50.00
Total.....	\$715.00

In addition the American Society of Mechanical Engineers has telegraphed to the Board of Regents tentatively suggesting the loan of its \$50,000 invested in Liberty Bonds as an assistance in financing the building. A number of offers have been made by private parties to completely finance the building. Announcement will be made later as to the method of financing which will be adopted.

3. The proposed building is to be known as the Engineering and Industry Building. It will be from twenty to twenty-five stories in height and located in a commanding position in the business district. It is proposed as the permanent home of the following engineering and industrial associations:

San Francisco Electrical Development League.
 San Francisco Engineers' Club.
 Joint Engineering Council of San Francisco.
 San Francisco Section, A. S. M. E.
 San Francisco Section, A. I. E. E.
 San Francisco Section, A. I. M. E.
 San Francisco Section, American Chemical Society.
 San Francisco Section, A. M. C. E.
 San Francisco Chapter, American Association of Engineers.
 California Association of Electrical Contractors and Dealers.
 Commonwealth Club.

It is expected the building will be ready for occupancy during the spring of 1924.

4. Rentals will be competitive with rentals in other class A buildings in San Francisco. The upper stories will be reserved for lunch rooms and club purposes.

5. The entire project is under the control of a Board of Regents composed of the following men:

John A. Britton, vice-president and general manager, Pacific Gas & Electric Company.
 W. E. Creed, president, Pacific Gas & Electric Company.
 Mortimer Fleishacker, president, Great Western Power Company.
 C. L. Chamblin, president, San Francisco Electrical Development League.
 J. E. Woodbridge, president, San Francisco Engineers' Club.
 J. H. McDonough, president, California Development Association of Agriculture and Industry.
 B. M. Rastall, Industrial Department, S. F. Chamber of Commerce.
 C. D. Marx, president, Joint Engineering Council of San Francisco.
 E. C. Hutchinson, chairman, San Francisco Section, American Society Mechanical Engineers.
 W. P. L'Hommedieu, chairman, San Francisco Section, American Institute Electrical Engineers.
 F. L. Sizer, chairman, San Francisco Section, American Institute Mining and Metallurgical Engineers.
 Bryant S. Drake, chairman, American Chemical Society.
 F. R. Muhs, chairman, American Society Civil Engineers.
 Chester Brown, chairman, San Francisco Chapter Association of Engineers.
 J. R. Millar, president, California Manufacturers' Association.
 Earl Browne, president, California Association Electrical Contractors and Dealers.
 C. E. Grunsky, past president, Commonwealth Club.
 Henry Bostwick, president, Pacific Coast Gas Association.
 J. W. Mahoney, temporary secretary-treasurer, secretary San Francisco Electrical Development League.
 Robert Sibley, chairman, editor Journal of Electricity and Western Industry.

6. In conformance with action taken at previous meetings of the Board of Regents, the following sub-committee activities were outlined and committee appointments made:

Committee No. 1—Large Rentals Committee

Henry Bostwick, chairman; J. R. Millar, Bryant Drake, W. P. L'Hommedieu.

The duty of this committee will be to investigate and report a list of prospective tenants who will require five or more rooms and the number of square feet each will need. Also they will report the dates when such space will be required. An initial fund of \$100 has been placed at the disposal of this committee to defray the expenses of its investigations.

Committee No. 2—Small Rentals Committee

F. L. Sizer, chairman; Ely C. Hutchinson, F. R. Muhs, Chester Brown.

The duty of this committee will be to make an investigation and report along the same lines as Committee No. 1, but covering prospective tenants who will require one to four rooms. An initial fund of \$100 has also been set aside for this committee.

Committee No. 3—Associations Committee

Chester Brown, chairman; Earl Browne, B. M. Rastall.

The duty of this committee will be to canvass all engineering and industrial associations who might be prospective tenants in accordance with the instructions given the other committees. The Board of Regents recognizes that reduced rates will be necessary for certain organizations that desire club room facilities. This committee will collect full data regarding such organizations. An initial fund of \$50 has been placed at the disposal of this committee.

Committee No. 4—Plans and Proportions Committee

C. D. Marx, chairman; J. E. Woodbridge, C. E. Grunsky, J. H. McDonough, C. L. Chamblin.

The duty of this committee will be to recommend a building site and to formulate tentative plans as to how the general arrangement of the building should be proportioned in order to harmoniously house the large rentals, small rentals, associations and club activities. This data is to be compiled as fast as tentative information comes in from the three committees. An initial fund of \$50 has been set aside for this committee.

7. The above committees may choose as helpers one each from the membership of the organizations represented by the Board of Regents. Some of the organizations have already designated such members.

Exporter Faces Problems in Developing Foreign Markets

Proper Selection of Samples and Labels to Suit Customs of Different Countries, Prompt Registration of Trademarks, and Complicated Consular Regulations Must All Be Observed

By HILMER OEHLMANN

H. M. Newhall and Company, San Francisco

AMONG the problems which confront the exporter who is endeavoring to develop business in new markets is the securing of names of firms which might be interested in handling his products, either as agents or as direct importers, depending upon the method in which he may wish to operate. After consulting the Commerce Reports and the various trade journals and directories established for this purpose, he may address quite a number of houses in a given market before he finds one which will even respond to his communication. Very likely his replies will come in the language of the country to which he has written, and he must be equipped to translate it. Usually the prospective agent sets forth in his first letter the need for being furnished with a full range of samples of all the merchandise in which the exporter may deal. The latter individual will wish to satisfy himself through the medium of his bankers or other sources of information that his prospective agent or client is reliable and has a sound reputation.

Samples Difficult to Select

Having decided to work with his correspondent, the exporter usually is troubled in making a selection of samples, for if the market is not one in which American food products are well established or if the prospective agent is not thoroughly familiar with the business, the exporter is left to his own judgment in making the selection. This may be rather difficult and expensive when we consider that there are, for example, thirty odd grades and styles of California canned asparagus, ten sizes of prunes, six grades of each variety of canned fruit and as many sizes and styles of containers.

Then there is the question of labels on canned goods. In the absence of definite information, the exporter may simply employ whatever labels are convenient in shipping his goods to the new market. He may forward goods under his favorite white and blue label to China, only to learn by bitter experience that these are mourning colors in that country. Or he may use green labels, being unfamiliar with the fact that the Chinese associate green with misfortune. He may ship peaches to Cuba under labels that bear a small vignette of a peach, not knowing that the Cuban is attracted by a picture of a large and luscious specimen of the fruit. But if he ships tins which actually contain six to eight large peach halves, he will find that the Cuban objects, because it is difficult to make an equitable distribution among his family of ten or twelve.

Some time ago an exporter of Pacific Coast canned goods forwarded a large range of samples to an Algerian firm, which experienced great diffi-

culty in securing the release of the goods from the custom house for an Algerian law provides that such goods must have the name of the country of origin stamped upon the tin of the containers.

Trademarks Should Be Registered

The registration of trademarks in foreign countries is another step to which the exporter must give his careful attention. In many countries a trademark belongs to the individual who first registers it, whether he has any connection with the export of such merchandise or not. Through ignorance of this provision or failure to observe the dangers presented, many a manufacturer and shipper has lost the right to use his own brand in a country where he may already have built up a substantial business, or has been forced to pay a royalty to the "pirate" who has registered his mark. Unscrupulous agents have often taken advantage of their principals in this manner.

Certain countries have strict regulations prescribing the manner in which canned goods shall be labeled. Of a more serious character are the pure food regulations of various countries. Canned goods which may be pronounced entirely wholesome in one country will be refused admittance into another on the ground that they are unfit for consumption. It is difficult to determine how much of this may be due to the influence of domestic producers of a competing article.

The necessity for properly packing his goods for foreign shipment has been abundantly impressed upon the American exporter. Particularly must he observe strictly the instructions of his clients when shipping to countries on the west coast of South America, for there are almost no harbors where ocean vessels may dock and few railroads from the ports to the interior. Vessels usually anchor out from port and discharge their cargo into lighters, and the process of dropping goods from a sling into the bottom of a small boat is often disastrous. At the same time, the packing should not be unnecessarily heavy and the cases not too large, as it may be necessary to transport them long distances over the mountains on the backs of pack animals.

Consular regulations in the several Latin-American countries are quite complicated, and the exporter must make sure that his shipments have been properly certified at the port of departure by the consul of the country of destination in order to avoid any difficulties for the consignees.

These and many other details must be worked out by the American exporter, the more so since the cessation of the war and the consequent diminution of demand has again made it possible for foreign buyers to discriminate in placing their orders.

Radio Equipment a Promising Line for Electrical Dealers

The Growing Popularity of Radio Telephony Resulting From Scientific Advances and the Establishment of Broadcasting Stations Has Opened a New Market for Radio Supplies

By ELLERY W. STONE

General Manager, Atlantic-Pacific Radio Supplies Company

THE establishment of radio broadcasting telephone stations the past few years is stimulating interest in the comparatively new and altogether fascinating field of radio telephony, and has opened up a promising market for radio equipment. In the past, demand for radio products and supplies has come mainly from the so-called "amateur" who desired above all things to experiment, to build his apparatus, tear it to pieces and rebuild it. The new market for radio equipment will be from the person who desires entertainment or information and not to experiment or learn the complexities of radio circuits. This class of novice desires simplicity above everything else as he purchases his radio equipment for his entertainment and does not desire to occupy his time making complicated adjustments.

Altogether the sales to the "amateur" today perhaps outweighs this new class of novice; unquestionably the novice will be the most profitable field as soon as present plans for establishing high power broadcasting telephone stations at various centers are completed. We may look forward to the day not far distant, when the reception of news, music and market reports by radio telephone will be as popular as "Kodaking." It is for the electrical contractor-dealer to realize the entirely new field which is opening up for him and to plan to cooperate in the development of this field and to hold it for his own, reaping the advantage which would otherwise go to department stores, drug stores and mail order houses.

Radio equipment is not a staple article, the purchaser wants to see and handle his prospective purchases rather than to buy them from printed descriptions in catalogs, so that the logical contact with the purchaser is through a retailer. This retailer may very profitably be the electrical contractor-dealer in addition to the radio dealer already established in the business and in place of the department stores and hardware stores which are already stocking radio equipment.

Market Greatly Enlarged

The present radio market is composed of all ages from the high school boy, who is interested in all things mechanical and electrical, to the adult, no matter what his business or profession, numbering approximately 700,000. The average adult who has become interested in the radio art, has done so because it is no longer necessary to learn the telegraph code in order to gain enjoyment from this pastime. Anyone now can enjoy concerts by radio in his home, no government license is required for receiving sets, and so far as technical knowledge is concerned, it is no more difficult—and probably easier—to operate a radio receiver set than to drive

an automobile. The equipment necessary to receive music and news items by radio is neither cumbersome nor elaborate and the cost is no more than that of a phonograph. It may be installed anywhere in one's house and there is no unsightly mast to be erected, as in the old days. A single bare copper wire strung from the roof to a house, tree or other support 200 ft. away is all that is required.

As has been said, until the last year or two, the radio market consisted largely of the boy who bought radio parts and in many cases only raw materials, with which he built his own equipment. That was before the advent of the radio telephone, when to be able to transmit and receive radio messages, it was necessary to learn the telegraphic code. As a rule, it was only the boy who had the time, the ambition and the ability to become proficient in the code. Because he was only a boy with a youngster's naturally limited purchasing power, he was restricted to the purchase of parts only and he was able to build a set which he could not afford to buy ready-made because he had an abundance of time which cost him nothing. Besides, he was not limited to eight hours daily production. Now that the adult is becoming interested in radio, he appears as a customer whose purchasing power is not so greatly limited as that of the experimenting boy. This fact cannot be too strongly emphasized.

Adult Has Larger Purchasing Power

What is the cost of the apparatus purchased by the amateur? The average boy starts off with a supply of parts and small equipment which will total from \$5 to \$15, and as his interest and his requirements increase, he buys more and better apparatus to add to or replace what he started with. The older amateur or the adult prefers to buy a set complete and his initial outlay will average at least \$50. By the time both types of amateurs get through with this thing (only fortunately they never do get through with it), they will have stations worth hundreds and even thousands of dollars. The average amateur has a capital investment greater, if not often worth more, than the unmarried man in his twenties who has not had this incentive to save. And the money which has gone into his station has been placed with the dealer who sold him his equipment.

It has been estimated by a reliable authority that the purchasing power of the radio amateur who "tinkers" and experiments is about \$25 per year. The radio customer who has the means and inclination to purchase complete sets ready-made of course does not buy new apparatus often. But he does buy supplies for renewal, and as he increases the range

of his set, and this invariably happens, he spends more for new equipment than the "tinkering" amateur spends in a number of years.

Electrical contractors, jobbers and dealers are constantly in touch with industrial and engineering concerns who are prospective purchasers of radio telephone equipment for commercial purposes. Such sales run into thousands of dollars at a time. The manufacturer or factory agent from whom this equipment is purchased will attend to all the engineering details required in making estimates. The contractor thus has an opportunity to share in the installation, and without being required to finance the order he can collect a substantial commission on the sale of the actual radio equipment.

There are some 6,500,000 farms in the United States with at least one boy per farm who can learn to operate a radio receiving set. The Department of Agriculture has commenced the erection of eight radio telephone stations at the various agricultural centers of the country to broadcast by telephone crop reports, crop and produce prices, weather and stock reports. There are several receiving sets on the market designed especially for farm installation. The radio manufacturers are advertising in the farm journals and these journals are running editorials and articles on the subject. Many jobbers who have their salesmen in farming territory will find a radio line a profitable one for them to handle.

In addition to the boy amateur, the power company industrial concern, and the farmer, there is the man who installs a radio receiver in his home for the reception of concerts, stock reports, baseball scores and other news items. There are many installations in private homes costing from \$200 to \$400.

There are five radio telephone stations in operation within 40 miles of San Francisco, on different time schedules and wave lengths so that it is possible to receive at least two and often as many as five radio concerts a night in every home. Grand opera concerts were broadcasted by radio twice this year from the station of the Atlantic-Pacific Radio Supplies Company in the California Theater and from the Fairmont Hotel in San Francisco. These concerts were received over distances upwards of 1000 miles.

Opportunity for Retailer

The public is being sold to radio. All that is needed is to round out distribution and the electrical trade is the logical medium to accomplish this. There are between 400 and 500 stores handling radio apparatus in the United States today but this is not enough. More dealers are needed. The requirements a radio dealer must meet are simple—a stock investment of from \$500 to \$1500 which can be turned over rapidly, and a salesman who knows the line. Any bright radio amateur will do for a salesman if he is not too young. Such an amateur knows what is needed to carry in stock, he belongs to one or more radio clubs, his friends will buy from that store, and the dealer may learn the radio business from him.

There are about 12,000 electrical dealers and jobbers with retail departments and 3,000 central station companies selling electrical merchandise in this country. This gives a total of 15,000 possible distributors for radio apparatus. This number is not too great because there are 700,000 bona fide amateurs as well as farmers and private home users to reach. Needless to say, those who get in at the start are the ones who will reap the greatest profits.

EXTENT OF FINANCING OF 16 CALIFORNIA POWER COMPANIES—1919-20

Outstanding Stock and Bond Issues with Increases During 1920 together with Number of Employees and Payrolls

Although the story of the physical side of the tremendous program of hydroelectric development now under way in the West is familiar to the readers of the Journal of Electricity and Western Industry, the question of financing this vast undertaking, while not as romantic and picturesque, is equally if not more important. The table shown below indicates the position and financial importance of the major California power companies. Despite the

nation-wide condition of unemployment during 1920, the power companies increased their numbers of employees, spending over twenty-six millions of dollars for labor. That hydroelectric securities are recognized as the soundest of investments is evidenced by the fact that seven millions of dollars of stock and fifty-two millions of dollars of bonds were absorbed during the year. It is significant that investors realize the possibilities of this field of investment.

COMPANY	Total Capital Stock Outstanding	Increase 1920	Total Bonds Outstanding	Increase 1920	EMPLOYES		Payroll 1920
					1919	1920	
California-Oregon Power Co.	\$ 10,000,000		\$ 5,593,000		193	460	\$ 349,700
Coast Counties Gas & Electric Co.	2,167,000	\$ 8,400	1,639,000		74	88	128,400
Coast Valleys Gas & Electric Co.	5,000,000		1,025,000		67	128	131,485
Great Western Power Co.	29,416,000	577,500	45,379,000	\$ 4,446,000	1,076	4,196	2,447,000
Los Angeles Gas & Electric Co.	10,000,000		10,969,000	2,500,000	227	351	473,335
Mid. Counties Public Service Co.	1,000,000		757,000		50	80	112,900
Mt. Whitney Power & Electric Co.	2,825,000				290	407	248,560
Ontario Power Co.	492,000	112,000	358,000		46	54	54,400
Pacific Gas & Electric Co.	66,437,000	3,636,500	119,937,000	26,493,000	5,500	7,099	10,918,800
San Joaquin Light & Power Co.	18,732,000	1,240,000	21,088,000	4,108,000	1,895	*1,391	2,551,800
San Diego Con. Gas & Electric Co.	4,442,000	541,000	6,782,000	75,000	166	184	319,700
Sierra and San Francisco Power Co.	20,000,000		17,000,000				
Southern California Edison Co.	35,700,000	1,144,000	63,000,000	13,283,000	4,618	5,639	8,315,250
Southern Sierras Power Co.	5,000,000		6,078,000	1,441,000	312	457	641,800
Vallejo Electric Light & Power Co.	100,000				45	51	70,000
West States Gas & Electric Co.	6,137,000	603,000	8,630,000	420,000	73	50	71,000
TOTAL	\$217,458,000	\$7,862,400	\$308,235,000	\$52,766,000	14,662	20,735	\$26,864,130

*Completion of Kerekhoff Project.

Study Course

A University Accounting Course for the Contractor-Dealer and the Business Men in the Small Industrial Plant

By PAUL B. KELLY

THE USE OF THE JOURNAL SHEET

The Journal Sheet is a very important form, for it is used for recording several classes of transactions. The various kinds of entries that are recorded on the Journal Sheet are here given.

Unusual transactions which cannot properly be recorded on any one of the special sheets are recorded on the Journal Sheet by means of regular journal entries and are posted from this sheet to the ledger accounts which they affect. Transfers from one account to another, such as the transfer of an amount from the "Accounts Payable" account to the "Notes Payable" account, occur rather often and are recorded in this way.

The monthly totals of the columns of any or all of the special sheets may be recorded on the Journal Sheets before being posted to the ledger instead of posted directly.

In closing the books for the month, recognition must be given to depreciation and certain contingent losses. Adjustments must be made in the group of accounts listed in the balance sheet under the heading "Working Reserves" and in the group of accounts listed in the monthly summary of operations under the title "Contingency Reserves and Depreciations." These adjustments are effected by means of journal entries. The journal entries ordinarily required each month to make these adjustments are as follows:

DEBIT	CREDIT
(a) Loss on Notes and Accounts Receivable	(a) Reserve for Doubtful Notes and Accounts Receivable
(b) Depreciation on Furniture and Office Appliances	(b) Reserve for Depreciation on Furniture and Office Appliances
(c) Depreciation on Automobiles	(c) Reserve for Depreciation on Autos
(d) Depreciation on Tools	(d) Reserve for Depreciation on Tools
(e) Depreciation on Merchandise	(e) Reserve for Depreciation on Merchandise

Of course before the foregoing journal entries can be made, the monthly charges for depreciation must be calculated. If other depreciating assets exist, additional journal entries will each month be necessary. For instance, if a building were owned, each month the following journal entry would be made:

(f) Depreciation on Real Estate.	(f) Reserve for Depreciation on Real Estate.
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In closing the books for the month, recognition must also be given to the fact that the passage of time has consumed a part of the assets shown in the balance sheet under the title "Deferred Assets."

At the end of each month, the value of the prepaid expenses must be reduced and the balances of certain expense accounts must be correspondingly increased. The journal entries which follow are the means used for making these monthly adjustments:

DEBIT	CREDIT
(a) Insurance	(a) Insurance Premium Advances
(b) Taxes	(b) Taxes Paid in Advance
(c) An Appropriate Expense Account.	(c) Deferred Charges to Income.

In closing the books for the year, the closing of the income and expense accounts into the Profit and Loss Account, and the closing of the Balance of the Profit and Loss Account into the surplus account, and the other closing transfers that may be required should be effected by entries first entered on the Journal Sheet and then posted to the ledger.

The Monthly Trial Balance

After the monthly totals of the columns in the special sheets have been posted to the ledger, and after the other adjusting entries required in closing the books for the month have been made, each account in the general ledger should be ruled off and the net debit or credit balance should be brought down. These net debit and net credit balances constitute the data required to compile the two monthly statements. However, before these two monthly statements are recorded in the book furnished for this purpose, the accuracy of the bookkeeping should be tested by compiling a trial balance. If the trial balance proves, as it should, as to debits and credits, the two separate monthly statements may then be made.

To compile the Monthly Balance Sheet and the Monthly Summary of Operations when once a correct trial balance has been secured is mere mechanical routine. The trial balance contains all the accounts necessary to compile both statements. The asset and the liability accounts when segregated constitute the balance sheet; the income and the expense accounts when separated comprise the summary of operations.

As part of the Standard Accounting System set, a book is furnished as a convenient means of making a permanent comparative record of these two monthly statements. The sheets of this book are arranged in pairs. On one sheet the asset, liability, and net worth accounts are listed; on the other sheet, the income and the expense accounts are arranged. Each of these sheets is provided with twelve pairs of columns—one pair for each month of the year. In order to compile the two monthly

statements, all that is required is to list the trial balance figures on the proper lines in the pair of columns allotted to the particular month. Nothing could be more simple.

In order to compile a Summary of Operations covering the activities of a single month, it is necessary to subtract from the figures shown at the end of that particular month, the corresponding figures shown at the end of the month preceding. A statement of this sort is required for certain purposes. It can be made up in a surprisingly short time.

Testing the Control Accounts

At the end of the month, after the net debit and net credit balances of the accounts in the general ledger have been brought down, a list of the balances of the accounts in the Accounts Receivable Ledger should be made. A similar list of the balances shown by the accounts in the Accounts Payable Ledger should also be compiled.

The net debit total of the list balances drawn by the Accounts Receivable Ledger should correspond with the net debit balance shown by the Accounts Receivable account. Likewise, the net credit total of the list of balances drawn from the Accounts Payable Ledger should agree with the net credit balance of the Accounts Payable account.

It is of course understood that this equality should and can exist only after all the transactions of the current month have been posted to the subsidiary ledgers and before any transactions of the ensuing month have been entered. If any discrepancy exists the presence of an error is indicated. This error should be located before any monthly statements are sent out or before any accounts are paid.

Reconciliation of the Bank Statement with the Cash Account

A bank statement should be obtained at the end of each month. The cash balance shown by the bank statement should be reconciled with the cash balance shown carried forward in the check stubs. If the total of subsequent deposits be added to the balance shown by the bank statement, and if the total of outstanding checks be subtracted, the difference between these two records should be reconciled.

If the difference is not reconciled by this procedure the presence of an error is indicated. To find this error, first go over the check stubs from the beginning of the month to see that all deposits have been noted, and that the calculations in carrying forward the cash balance have been correctly made. If the discrepancy is not located in this way, the calculations made in attempting the reconciliation should be checked over. If the discrepancy still persists, compare the amounts on the returned checks with the amounts entered in the columns on the check stubs which were used in making the calculations. Look for the error in the bank statement only as a last resort. When this becomes necessary, compare the amounts listed on the bank statement with the amounts of the returned checks to see that no omissions or wrong listings have been made. The calculations made on the bank statement may then be tested.

The balance shown at the end of the month by the Cash Account should agree with the balance shown on the check stubs and with the balance shown by the bank statement after adjustments have been made. Of course, care must be taken not to secure an agreement between the balance of the Cash Account and the balance shown on the check stubs if deposits or checks of the following month have entered into the calculation of the latter. The agreement of two of these cash records is a strong indication that an existing discrepancy is due to an error in the third.

If apparently an error has been made in the Cash Account, the search to locate it should proceed along the following lines. First, compare the deposits in the bank with the amounts entered on the Cash Received Sheets during the month. Next compare the amounts of the checks as recorded on the check stubs with the amounts listed on the Cash Paid sheets in the "Bank" column. This procedure should bring the error to light.

Locating Discrepancies Between the Control Accounts and the Subsidiary Ledgers

Skill in quickly locating discrepancies will be gained with experience. Judgment as to the order in which the following steps should be taken in the search for an error will develop with practice. To locate a discrepancy between the Accounts Receivable Ledger and its controlling account pursue the following measures:

1. Check over the addition of the list of balances drawn from the Accounts Receivable Ledger.
2. Compare the balances shown in this list with the balances of the accounts in the Accounts Receivable Ledger.
3. Check over the additions and subtractions made during the month in each account in order to make certain that the present balance was correctly calculated.
4. Check each item listed during the month in the Accounts Receivable column of the Cash Received sheets to make certain that a corresponding credit of equal amount was posted in the Accounts Receivable Ledger. As each item is thus checked against the amount posted in the subsidiary ledger, a "check" mark opposite the item should be placed in the space provided for this purpose on the Accounts Receivable pages. An item posted to the Subsidiary Ledger without being listed also on the Cash Received Sheet will thus become conspicuous.
5. In the same way, check the items listed during the month in the Sales Billed columns of the Sales Recapitulation sheets to see that corresponding debits of the same amounts have been posted to the accounts in the Accounts Receivable Ledger.
6. Run through the accounts in the Accounts Receivable Ledger to find any amounts with no "check" marks opposite them as the result of steps 4 and 5. Investigate these items to see if they have been posted in this ledger without being listed in the special sheets.
7. Check over the addition of the Sales Billed columns of the Sales Recapitulation sheets. Also see that the footings of these columns were correctly posted to the Accounts Receivable Account. At the same time see that no amount has been entered in the Accounts Receivable account which should have been posted to some other account.
8. Check over each entry posted to the Accounts Receivable account from the Journal sheets to make sure that corresponding entries were made in the accounts of the Accounts Receivable Ledger.

Similar measures must be taken to locate a discrepancy between the Accounts Payable account and its subsidiary ledger. The foregoing instructions for locating discrepancies in Accounts Receivable will suggest those necessary for accounts payable.

Increasing Production in Industry

Shortcuts in Management and New Power Applications That Have Reduced the Cost of Manufacturing Processes or Increased the Rate of Production.

Ideas and Suggestions by Practical Men.

Eliminating Accidents by Better Lighting Increases Output

The records of insurance companies indicate that a great many of our industrial accidents are due to defects in the lighting installation. The services of 108,000 men for one year are lost annually because the illumination provided has not been sufficient for the safety of workers. The difficulty is as much one of improper illumination as of inadequate illumination. The question of diffusion, proper distribution and the elimination of glare has not been given the proper consideration.

Any practice which permits the use in one place of lamps which have been discarded elsewhere on account of decreased candle power due to long service, should not be countenanced where they would reduce the amount of illumination. Great care should be exercised in seeing that low candlepower lights are replaced before any marked decrease in their power of illumination occurs.

Particular attention should be given to the proper lighting of stairways, elevated gangways and passages in rear of boilers and to dumps beneath, as these are most frequently inadequately lighted. The same applies when provision is made to go in and around conveyors.

In cases where pipes cross a passageway at a distance of less than 6 ft. 6 in. above the floor, each pipe should be marked with a light on either side and not suspended from the bottom of the pipes.

Stairways leading to condenser and auxiliary pits should be properly illuminated as should also the approaches to all machinery located in such pits. The same should apply to all passageways.

All doorways leading from the plant to the outside should be lighted and also all walkways outside the plant when a change in elevation or direction occurs, in order to prevent falling or tripping. Storerooms should be adequately illuminated.

In places where illumination is not required continuously, switches may be installed at the entrances so that lights may be turned on when entering and off when leaving.

The illumination necessary to prevent accidents is comparatively small; most lighting codes give the following minimum to be maintained:

Yards and roadways .....	.02 foot candles
Interior lighting, storage passageways, etc. ....	.25 " "
Handling material and very rough operations .....	.50 " "
Rough bench work	1.25
Office work	3.00
Drafting	5.00

The Journal of Electricity and Western Industry will welcome suggestions from electrical manufacturers, jobbers and dealers as to what the industry can do to avail itself of the Christmas trade and put over the Electrical Christmas idea. Pictures of window displays, samples of literature and suggested sales helps sent in by the industry will be used in these columns.

While insufficient illumination which causes eye strain cannot be said to lead directly to accidents, yet in the final analysis injury to the eyesight because of insufficient or improper light decreases the usefulness of the employee in future years and for that reason as great care should be used in preserving eyesight as in preventing other physical injury.

Likewise, great care should be exercised in lighting installations to avoid glare and to prevent the formation of sharp shadows, as these conditions are more dangerous than less illumination with better distribution. Glare may cause momentary blindness and result in accident.

Of equal importance to the proper installation of a lighting system is its maintenance. The loss of illumination due to coating the reflectors and globes with dirt will be 60 per cent or more. A systematic inspection and a regular cleaning schedule are the only satisfactory solution for this difficulty. A great deal of this class of maintenance expense can be eliminated if due consideration is given to the proper installation of lighting equipment with reference to galleries or other means of reaching lamps or lowering them for cleaning and replacement.

For emergency work at night, some equipment is required which can be quickly adjusted to any elevation and is light and portable enough to be easily transported and quickly put in operation. A storage battery type of searchlight fulfills this requirement most satisfactorily.

Importance of Keeping Mailing List Up-to-Date

Keeping the mailing list up to date has been a trying duty with more than one concern. However, that duty becomes almost automatic if the list is circularized frequently.

To keep a list up to date, this inviolate rule should be adhered to strictly:

Always have a return address and postage guarantee on all third-class mailings.

Third-class matter is not subject to forwarding rights unless forwarding postage is guaranteed, and consequently if the firm or individual to whom the mail is sent has moved, quit business, etc., the mailing piece will be returned to the sender. Then the address plate representing the undelivered mail can be taken from the file and the name and address forwarded to a salesman in that territory for a correction of the address.

In case the firm that does the mailing does not have a salesman in that territory, the sender should consult trade directories or telephone books to secure the right address.

Should the sender be unable to find the addressee in this manner, he has one more recourse: He may send the mail under first-class postage and enclose a return card with the request that the addressee give his correct address and return the card. First-class mail has forwarding privileges and in 90% of removal instances, forwarding addresses are left with the postoffice. Or, if this has been neglected, the postoffice in each city has access to the latest directories and will make an effort to locate the addressee and deliver the mail. Of course, the sender in this instance depends on the addressee to supply his new address.

Mailing lists deteriorate rapidly when not in use, but a little work after each mailing will keep them up to date.

Here are some of the commonest ways of rejuvenating mailing lists as recommended by the manufacturers of "Addressograph" equipment:

1—Addressograph individual cards with the names and addresses of all on the mailing list and send the cards to the salesmen in the field for correction with instruction that they also add any new names they think would make likely prospective buyers.

2—(a) Send out a mailing under third-class postage with return postage guarantee on envelope so that all undelivered mail will be returned. (b) Upon receipt of undelivered mail send out mail under first-class postage with enclosed return card requesting the addressee to correct his address and mail the card.

3—Check your list against latest telephone directories in towns and cities where the mailings go. Telephone directories can be purchased at nominal rate and also supply excellent field for securing new names.

4—Have responsible mailing list company check your list. Price is nominal and will be saved in postage and also on misdirected literature—not to mention increased sales.

5—Send out special offer return postal card or use some "catch" proposition

to force reply from addressees, specifying that they give correct address.

The last mentioned way is expensive, but serves a double purpose. It permits you to introduce samples of your goods and also gives you the highest class list of interested firms and persons, for only those who have an honest interest in your goods will respond.

That scheme was worked successfully by a paper mill recently. In sending out their literature, they advertised that they would send a layout kit of papers, etc., to any interested person returning the post cards. The kits consisted of samples of the mill's paper in suitable form for layout work.

Australian Devises Collapsible Case to Prevent Pilfering

Nothing so much needs protection from the weather and thieves, says "Transport," as merchandise in transit, and yet, as a general rule, nothing is so crudely encased. Boxes of the poorest timber, roughly fastened with nails and hoopiron, are thought good enough to contain stuff of high material value on journeys covering thousands of miles by sea and land. Even in his home, under his constant personal attention every day, a man will keep his valuables behind bolted doors or in locked drawers, within walls of brick and stone. But he lightly consigns his greatest wealth—merchantable commodities—to trains and ships, and sends it hurtling around the world in flimsy constructions which he would scarcely offer as a shelter to his household dog.

Maybe this carelessness in handling transported wealth is encouraged by the wonderful and elaborate system of invoicing and insurance that meets freight and cargo risks along all the avenues of trade, but no safe system of insurance of goods against pilfering has been or ever will be devised.

What merchants and shipping firms alike have most ardently desired in this regard is a form of package that will defy the looter, or at least make it impossible for him to broach a case without leaving an immediate and conspicuous mark upon it.

Such a container has been devised by C. S. Rainsford, of South Australia, known as the Rainsford collapsible case.

The sides of the case are hinged to the bottom by very strong flush hinges, easily removed. The upright edges of the sides fit as neatly as a glove fits to the hand, and are gripped on the inside by means of steel rods slipped into steel hasps. The lid grips all round the top with a mortise joint, and is held down by steel grips that take only an instant to fasten and hold like a vise. All the outside edges are metal-bound, and the lid is held by a sealing adopted by the particular firm using the case, and which cannot be falsified or supplanted without detection.

When emptied of freight, the case folds down on its bottom, making a neat flat parcel, which can be transported in a fraction of the space required for the full case. This means an immense economy in freight where quantities of cases have to be returned empty. The case can be assembled or dismantled in a few minutes, and as there are no nails to be drawn, or hoopiron to be cut, and no chisel or hammer required to un-

fasten or fasten it, it remains as good before as after use, and can be filled and emptied, and sent on long or short volages by sea or land, ten or a dozen times without showing any really important signs of wear.

It has been estimated that a firm using 6000 cases a year, would only need 500 collapsible cases to do the same work. This would allow one month for the case to be sent and returned. There is no reason why the case should not last two years or more.

New Puget Sound Industry Tans Shark and Whale Hides

The Universal By-Products Co. recently established a plant on Puget Sound at Edmonds, Washington, where considerable quantities of high grade leather are being made from the skins of sharks, whales and seals. Not only are the hides utilized, but "most beautiful and delicate leathers may be produced from the stomach and intestines of whales. This leather rivals in softness and grade the finest kid skin and lends to the finished product the colorings that are most sought after in the production of gloves for the exclusive market. There is always a strong demand for leather of this quality among manufacturers of leather goods," according to a description of the new industry by E. A. Batwell in the Puget Sound Electric Journal.

Although leather from shark hides is said to withstand a much heavier strain than any other known leather, the new company does not enter the shoe leather field. It can supply a market that pays a higher rate and is not in competition with leather made from cow hides. The plant is now turning out an average of 60 skins or 2400 sq. ft. of leather per day and is planning to expand soon so as to handle 500 skins per day. At the average rate of 16 days for the complete process, this means that 8000 skins will have to be in process continually to make the output 500 per day.

The average shark taken in these

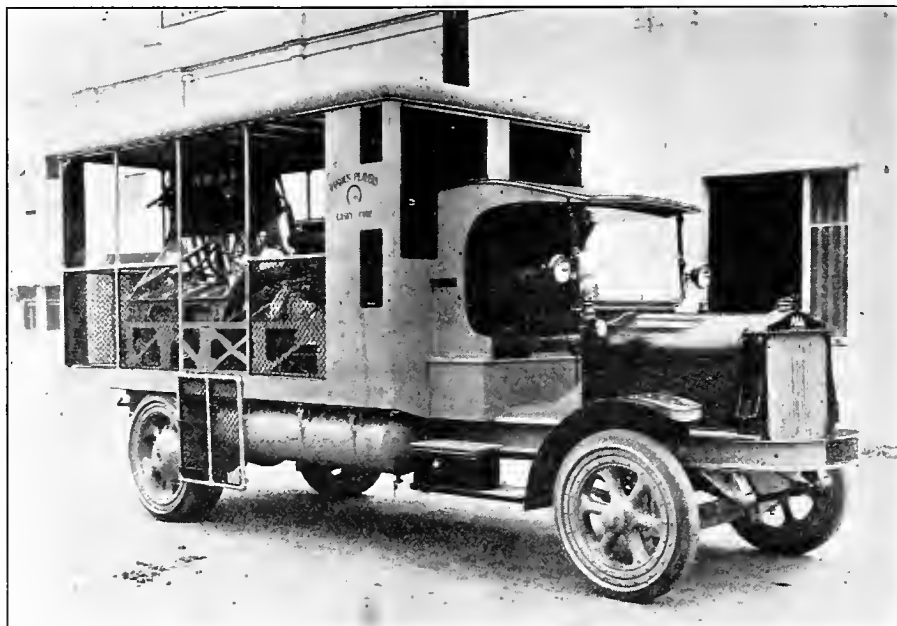
waters is 10 to 12 ft. long and has about 35 sq. ft. of skin. Unlike cow hide, all parts of the shark's skin are equally valuable. The skins are sometimes as much as 1½ in. thick and can be split ten or twelve times. Split shark hide is said to take the same fine finish as the outside section which is the only part of the split hide of horse or cow that will withstand wear well.

J. F. LaVerne, the head of the enterprise, has developed various processes and equipment which have made the venture commercially successful. He feels no doubt about the sufficiency of the supply of raw material and states that enough sharks could easily be taken immediately in front of the factory to supply ordinary demands.

Novel Power Plant Mounted on Truck Develops 300 Hp.

The Famous Players-Lasky Corporation, moving picture producers, have designed and are using in their California studios a portable lighting plant which is said to be the largest of its kind thus far built. It can supply sufficient current for lighting the largest interior set or will illuminate exteriors several hundred feet square. In the parlance of the movie industry, the capacity of the portable plant is 69 Klieg-lights—lamps of a type used chiefly in motion picture photography. The equipment is carried on a standard 5-ton White truck with solid tires and is a completely self-contained unit. The lighting equipment can be operated while the truck travels at 16 miles per hour, if desired, thus making possible the illumination of processions, etc.

The power plant proper consists of a 300-hp. marine type gasoline engine driving a submarine type General Electric generator, capable of delivering 1800 amperes at 110 volts. This equipment is all carried on a 3-point suspension, mounted separate from the main truck chassis so as to reduce danger to alignment resulting from shocks sustained in transit over rough roads.



Portable power plant of the Famous Players-Lasky Corporation which delivers 1800 amperes at 110 volts.

Western Dealer, Jobber and Agent

Business building suggestions for the store—Distribution and warehousing methods—Advertising and sales promotion ideas

Electric Home Game Devised For Holiday Gift

"The Electric Home Game" invented by W. W. Ayre, 225 Fifth Avenue, New York, promises to prove an invaluable aid to all branches of the industry in sales, merchandising, advertising and educational work, especially with reference to the electrical home.

The game consists of thirty-two movable pieces or reproductions of electric appliances which should be used in every modern home together with a spinner on which the names of the appliances are printed and the game base proper or room plan for the home. Each room has a number of convenience outlets with the name of the appliance commonly used. Along both sides of the game base are small duplicates of the appliances with a descriptive paragraph and the "game value" of each piece.

Rules for playing the game are simple and they have been planned with a view of making the game interesting for both parent and child alike, from the time the house is "wired" until the last appliance has been installed.

The size of the game follows: length, overall, 21 inches; game base proper, 14 $\frac{1}{4}$ inches; width, 13 $\frac{1}{4}$ inches. It is printed in three colors on several weights of board. The game was not only designed to make a striking piece of display literature but also to take the place of the ordinary calendar given away by manufacturers, central stations, dealers and other branches of the electrical industry during the holiday season. It is so arranged that the entire reverse side can be used for the merchant's message or imprint.

Selling Argument for Fans in Out-of-Season Months

Electrical dealers who consider the electric fan as a purely seasonal appliance, saleable only during the hot summer months, might consider some of the following selling arguments for moving the fan stock during the winter:

If wash day is rainy and it is necessary to dry the clothes inside, a fan placed on the floor will shorten the drying period at least one-half.

Double the heat radiation can be secured from steam or hot water heaters by playing a fan on them for half an hour on cold mornings.

A fan in the cold air intake of a hot air furnace will hurry the hot air through the pipes and quickly warm the house when a fire is started in the morning.

A fan in the kitchen window will drive out smoke and odors and make the kitchen more comfortable. It will dry the dishes quickly also.

For drying the hair after a shampoo, the fan is invaluable.

Display Windows as a Sales Asset to the Dealer

What the Electrical Contractor-Dealer Can Do to His Windows to Raise His Average as a Real Self Advertiser

By S. W. BISHOP

Executive Manager, Denver Electrical Cooperative League

The display window is one of the retailer's chief assets. The general storekeeper in the small town and the exclusive shopkeeper in the metropolis have the same opportunity of capitalizing it. Yet how many merchants there are who fail to grasp the advantage of this form of advertising.

Unfortunately the electrical contractor-dealer has been placed far down the list of those businesses failing to properly advertise themselves. How many are there in this group who fail to look at the label on the can of vegetables or other edibles which they buy in the shop around the corner? The attractiveness of the label, its snap, power of suggestion, and desire for the article thus lithographed usually turns the trick.

So it is with the display window and the effect it produces in the minds of the passersby. Modern store-fronts, artistic signs—electrically illuminated, if possible—and clean window panes are more or less necessary before any good can be had from a window display. Simplicity of design, mellow color tones, and the proper atmosphere will work wonders with any merchandise thus displayed.

However, to the prospective customer who has never been within the store, the outside appearance of the display window acts just like the label on the can. If it is suggestive, clean, artistic, practical, simple, orderly, and interest-

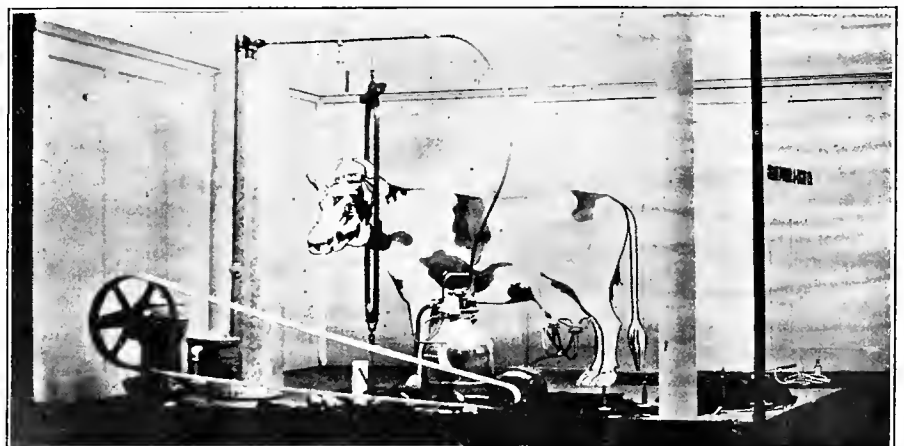
ing, the passerby may stop and look—then trace his steps through the door and good salesmanship and advertising within the store must deliver the goods.

Certainly nobody should make more use of electricity on their store-fronts and in their display windows than the electrical contractor-dealer. That is the piece de resistance of his business, really his stock in trade. If he is a live wire, the white light will be found in evidence. What is more logical than electricity advertising the electrical man?

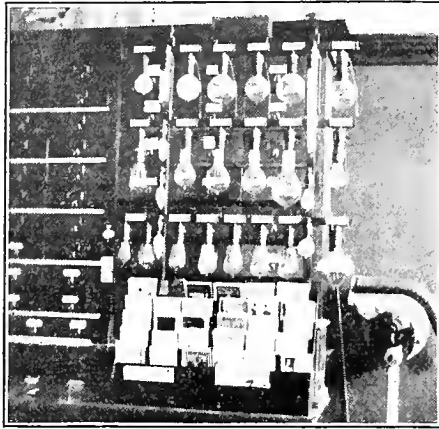
The electrical jobber can well afford to make his window displays attractive especially where there are passersby who may be headed to the retail district for some kind of electrical merchandise. Just because he does not sell over the counter and direct to the consumer is no reason why he should not strive to make a pleasing impression on those passing his place of business.

Part of the regular advertising budget should be spent on ideas, material, and the necessary "atmosphere" of the display window. Per square foot it is the most valuable space in the store and it should be treated accordingly. Seasonable trims showing a proper amount of merchandise is far better than the year-round storage idea. Intelligent use of display windows attracts attention, and then customers, and then profits.

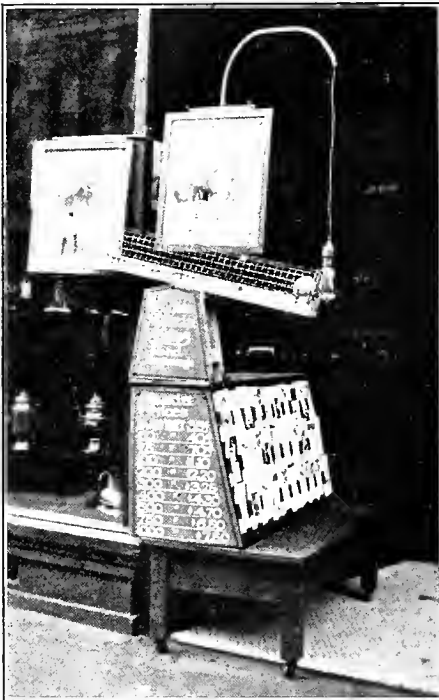
SELLING THE FARMER IN RURAL DISTRICTS



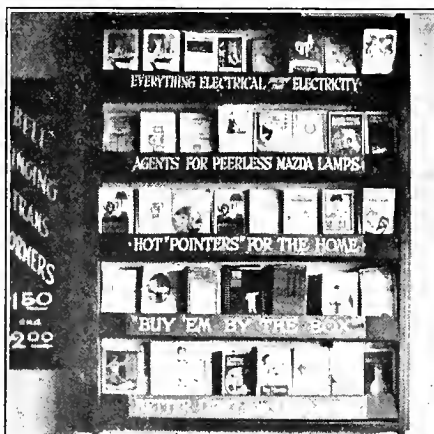
Live stock shows throughout the West during the Fall months have been the motif for many displays of electrical farm equipment. The Utah Power and Light Company at Provo, Utah, used the above window display of electrical milking equipment to demonstrate one of the many applications which electricity has for the farmer.



Galvanized iron advertising rack installed by the Hartwell Electric Company, San Diego, with lamp display rack in conjunction with it.



Wilson's Electric Shop, Los Angeles, combined a moving lamp display with an advertising rack and distributed quantities of literature.



Advertising display rack installed by the Golden State Electric Company, Los Angeles, consisting of stained wood to match the store finish.



The advertising display rack used by the Reynolds Electric Company, Santa Barbara, consists of a large frame made to match the woodwork of the store to which an ordinary postcard holder is attached. The rack is placed on a convenient table.

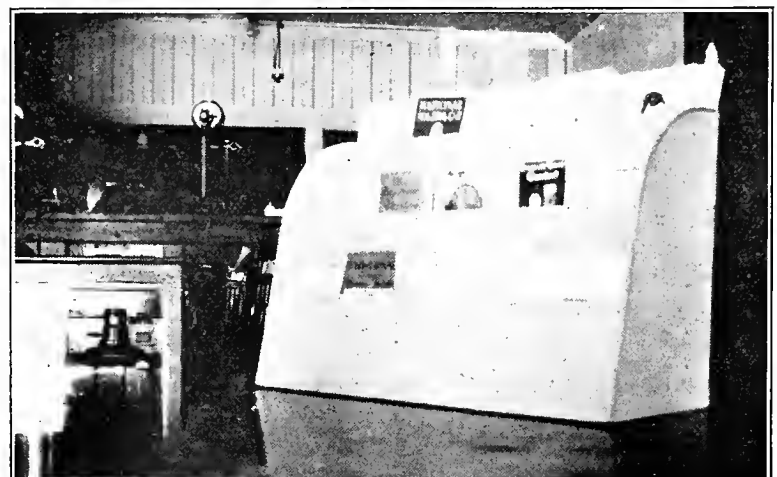
Effectiveness of Manufacturers' Literature Always Dependent Upon Method of Display

Southern California Dealers Have Novel Schemes for Deriving Most Benefit from Descriptive Literature by Attractive and Pleasing Displays

MANUFACTURERS' literature or sales helps can be placed in three classes as far as the electrical dealer is concerned. First there is the kind which is sent through the mail or distributed to the homes, recognized as the least efficient. Then there is the type which is displayed in the store and which is placed so that the customer or shopper will pick up the booklet in which he or she is most interested and take it home to be read during spare moments. Lastly, there is the type in which the prospective buyer is so interested, that he will pay money to purchase it. The second type is the one in which the electrical dealer is most interested as it costs him nothing to distribute.

It is a recognized fact that the visitor to the store who is so interested in an appliance that he will pick up literature to carry home, is a real live prospective purchaser. In nine cases out of ten, the customer sells himself on the appliance with no cost to the dealer. That is a good type of customer to have for the sale is virtually a find. The dealer's problem resolves itself into that of placing this literature in such a position that it will be readily available to the public and at the same time arouse interest. Recall the number of times you have seen a customer glancing through a booklet or pamphlet placed on the counter of a store while the clerk was wrapping a purchase or getting change.

The dealers in Southern California have emphasized this point and have devised many novel ways for making the message in the circulars effective. Many have merely arranged convenient racks in such a position that customers will be involuntarily placed near them. Others have gone further than this and have arranged clever moving displays which will tend to first draw the attention of the customer, making the literature display secondary. The accompanying illustrations show how these dealers are deriving the most benefit from the literature furnished them by the manufacturers.



Snyder and Bell, San Bernardino, had constructed a portable metal display rack consisting of three long compartments in which the literature was placed. The entire rack was finished in old ivory and moved from place to place in the store.

Manufacturer Aids Spread of Convenience Outlet Idea

Just how manufacturers of electrical appliances can aid in the spread of the convenience outlet idea has been demonstrated by the Majestic Electric Development Company of San Francisco, which has recently issued a million small circulars descriptive of the heating appliances manufactured by the

Electric "convenience outlets" in all rooms add to your pleasure from your electrical appliances. Speak to your dealer about them.



The convenience outlet slogan which is being carried over the entire country in a million circulars which have been issued by the Majestic Electric Development Co., San Francisco.

company, each of which bears a powerful message concerning the installation of this household necessity. The circulars are being sent to dealers throughout the country to be distributed to their customers.

This San Francisco company has also instituted an advertising campaign which has called for the erection of 300 billboards in San Francisco, Oakland, Berkeley, Alameda and Los Angeles. These billboards will be maintained throughout the heating season and are arousing a great deal of favorable comment among the trade.

Denver League Develops Xmas Merchandising Aid

Through the Electrical Cooperative League of Denver, a Christmas merchandising feature has been developed for the use of the member contractor-dealers in the form of an electrical merchandise gift certificate. Although this scheme has been used in other lines and especially by dry goods stores, it is believed to be the first time such application has been made to the sale of electrical merchandise.

It has been developed in Denver as part of the "Make This an Electrical Christmas" movement which will be featured in the cooperative advertising campaign now being conducted in that city. The certificates will be introduced during Electrical Week, December 5-10. At that time the people of Denver will be invited to "look around" and get acquainted with the strictly electrical shops in order that they may know the service and merchandise awaiting their demand.

The certificates are printed in two colors, red and green, and contain decorations representing the holiday season. The insignia of the Cooperative League is prominently displayed and one of the features represented in the certificate, and referred to on the face of it, is that the electragist issuing the certificate is a member of the League and as such will give in addition to his service, whatever advice or counsel is desired in things electrical. Moreover, the League backs the offer, guaranteeing the service of the dealer.

The possibilities of use of the certificate are readily seen in the case of uncertainty on the part of the purchaser not knowing whether the intended recipient has a particular appliance, and if not, whether it can be used. Likewise the certificates make possible additional sales as in the case of the certificate representing five dollars which is to be applied on a toaster or another appliance costing \$7.50.

A four-color poster apropos of the holiday season is being distributed by the League, emphasizing Electrical Week and the desirability of the merchandise certificates as timely Christmas gifts.

According to S. W. Bishop, executive manager of the League, the present outlook for holiday buying is being materially strengthened through the certificate idea.

Suggested Eight Hour Schedule for Electrical Housewife

An eight-hour day for the electrical housewife which might be used in conjunction with a window display emphasizing the appliances mentioned has been suggested by a member of the electrical industry in the West. It is suggested that dealers have the program painted on a large card which is to be placed in the window and the display built around it. The schedule, which might also be included in sales literature, follows:

7:30-8:00—Prepare breakfast; put clothes to soak (Monday).

8:00-8:30—Serve breakfast. (Make coffee at table in electric percolator. Make toast at table on electric toaster.)

8:30-9:00—Clear table, wash dishes in machine, brush up dining room and start clothes to washing in machine.

9:00-10:00—Monday—wash clothes and put on line. Wash curtains of one room each week. Tuesday—Iron clothes with electric ironer and electric glad iron. Wednesday—Clean second floor including windows of one room each week. Thursday—Clean silver, icebox and cabinets. Friday—Clean third floor and basement. Saturday—Clean first floor including kitchen.

10:00-10:30—Marketing.

10:30-11:00—Rest and read newspaper.

11:00-12:00—Tidy bedrooms and place in electric range any foods for dinner which require long, slow cooking.

12:00-12:30—Prepare luncheon.

12:30-1:10—Serve luncheon.

1:10-1:30—Clear dining room and wash dishes in dishwasher.

1:30-5:00—Recreation. (Two afternoons each week devoted to sewing.)

5:00-6:15—Prepare dinner.

6:15-7:30—Dine, clear table, wash dishes in electric dishwasher and make preliminary preparations for breakfast.

S. E. D. Has Christmas Sales Helps for Dealers

With the mailing to the trade of a folder describing the plans and selling helps The Society for Electrical Development, Inc., New York, will launch its seventh annual campaign to help the electrical industry promote the buying of electrical Christmas gifts.

Gift Suggestions
For every member of the family

For Father
AN ELECTRIC
Toaster
Electric Iron
Electric Shaver
Electric Clock
Electric Kettle

For Mother
AN ELECTRIC
Toaster
Electric Iron
Electric Shaver
Electric Clock
Electric Kettle

For "Her"
AN ELECTRIC
Toaster
Electric Iron
Electric Shaver
Electric Clock
Electric Kettle

For "Him"
AN ELECTRIC
Toaster
Electric Iron
Electric Shaver
Electric Clock
Electric Kettle

For Children
AN ELECTRIC
Toaster
Electric Iron
Electric Shaver
Electric Clock
Electric Kettle

For Elderly Folks
AN ELECTRIC
Toaster
Electric Iron
Electric Shaver
Electric Clock
Electric Kettle

Electrical Cheer

Electrical Gifts at Christmas time, as on all other gift occasions, are not baubles or trinkets for a day. They are lasting gifts which carry electrical cheer throughout the years.

Keen joy, real enthusiasm and gratitude will radiate from grown-ups when they receive something electrical as surely and as strongly as from the children who are given electrical toys.

For the recipients, Electrical Gifts will give Christmas day an added meaning and increase happiness, comfort, and convenience every time they are used.

Then give electrical gifts for Christmas. They answer the question, "What shall I give?" most satisfactorily.

There is something electrical for every member of the family at our store.

(Your Name and Address)

A facsimile of one of the newspaper advertisements emphasizing the electrical Christmas idea which have been prepared for the industry by the Society for Electrical Development, Inc. of New York.

The three major selling helps offered by the Society this year are:

1. An elaborate set of window display cut-outs.
2. A set of store and window display cards including one large card with eight smaller price or suggestion cards.
3. A beautiful 8-page folder including an invitation to visit your store together with many illustrated gift suggestions. This is designed to be mailed to prospective customers, to be enclosed with letters or distributed at the store.

As a further aid to the members of the industry, the Society has prepared a number of newspaper advertisements suggestive of the electrical Christmas gift idea. Mats have been prepared of these ads and a blank space left for the name of the dealer. The advertisements will also be sent with the other Christmas sales helps to the trade.

The keynote of the campaign is expressed by the slogan, "Bring Back Business by Getting Busy Selling." Merchants are urged to get their selling activities into full swing as early as possible on the theory that people are learning to "Shop early" and the electrical merchant must, therefore, be ready to sell early.

It has been the experience of the Society that each of its Christmas campaigns has shown an increase in material ordered over the preceding year's drive. All signs indicate that this year will follow the rule.

Campaign helps are available both to members of the Society and to those who are not members.

Activities of the West

A Business Man's Department Devoted to Events and Developments in Western Industrial Centers—Including News of Interest to Readers in Public Utility, Industrial and Trade Fields

Project is to Cost \$5,000,000

Washington Plans to Begin Largest Irrigation Scheme in Northwest

The Greater Wenatchee Irrigation Association, headed by F. W. Schultz, Wenatchee banker, has completed preliminary work on one of the greatest single reclamation projects ever undertaken in the state of Washington. The work is planned for the Wenatchee and Columbia River valleys, where more than 46,000 acres of fruit and farm lands will be reclaimed. The total cost of completing the project has been estimated at from \$4,500,000 to \$5,000,000.

Embracing an area including 21 townships, stretching from a point near Wenatchee Lake, approximately thirty miles north of Wenatchee, to the Moses-Coulee district, 20 miles southwest of the city, the lands coming under the proposed project have a present estimated valuation of \$4,708,900, and according to engineers and reclamation experts, the ultimate valuation will approximate \$18,000,000. Two months' time will be required to complete final estimates of valuations and costs. When this is completed, arrangements will be undertaken for financing the project, and it is hoped by officers of the association to have actual work started on the project in the next 12 months.

Butte-Superior Mine Reported Ready to Open

Business interests in Butte, Montana, report that the Butte-Superior mines which have been closed for some time, will reopen the first of the year. The concentrates will be treated at the Great Falls smelter of the Anaconda Copper Company. While there have been no substantial gains in the market for zinc, which is the mines' chief metal, the demand for pure electrolytic zinc is such as to warrant the opening of the properties. Development work and pumping have been going on for some time and it is reported that a considerable quantity of high grade copper ore has been uncovered.

Oregon Town Enters Municipal Power Business

The city of Minnville, Ore., is contemplating entering the municipal power business, according to an application for water filed with State Engineer Percy A. Cupper. The city has asked for a permit to construct a dam on the headwaters of the Nestucca river for the storage of 6000 acre-ft. of water and to appropriate 35 sec.-ft. of water through a pipe line and tunnel five miles long. The water will be dropped into a power house at Panther Creek under a head of 1460 ft., where it will be used to generate 5807 horsepower and will cost \$350,000.

Northwest Lumber Mills Almost Normal

One hundred and six lumber mills reporting to the West Coast Lumbermen's Association for the week ending Nov. 12, reported lumber manufactured during the week at 64,815,747 feet; sold, 61,891,222 feet, and shipped 57,325,488 feet. For the mills reporting, production was 19 per cent below normal; new business was 5 per cent below production, and shipments were 12 per cent below production. Forty-four per cent of the week's business is to be shipped by water, 18,702,222 feet for the coastwise and inter-coastal trade, and 8,449,000 for export. Orders to be delivered by rail were low at 1,158 carloads.

Utah Joins Campaign for National Reclamation

Announcement by the National Chamber of Commerce that it will endorse the campaign for the undertaking of a nation-wide reclamation plan and the invitation from the president of that organization to join the issue, has resulted in the appointment by Governor Mabey of Utah, of a committee to prepare a report on the irrigable lands in that state. A committee composed of William R. Wallace, R. E. Caldwell, state engineer, and A. F. Doremus and W. O. Creer of the Utah Water Storage Commission, will immediately prepare a map of the entire state showing the waste land which might be improved and the amount of land already improved. The committee will also report on the probable cost of the reclamation, the character of crops to be grown and the value of the land when reclaimed.

Mining Interests Reported as Backing Girand Project

J. G. Girand, engineer of Phoenix, Ariz., is believed to be backed by the Jackling mining interests in his applications for water from the Colorado River below Diamond Creek for the generation of electric power, according to reports from Los Angeles. The plans call for the construction of five dams, the only ones which have so far received franchises from the United States Power Commission. They will be known as detention dams and will afford flood control for the Yuma and Imperial valleys. However it is believed that the fundamental purpose of the dams is the provision of power for mines in Nevada, Utah and Arizona. The plants would generate 150,000 horsepower.

The Northern Pacific Railway recently announced the general offices and headquarters of its western terminus will be moved within the next month or two from Tacoma to Seattle. The removal means bringing of a staff of 150 men to Seattle.

S. F. Population is 676,164

Estimate Prepared by Telephone Company Officials Shows Gain

San Francisco's population is placed at 676,164 inhabitants instead of 506,676 as given in the 1920 census in a survey prepared for the Chamber of Commerce by T. F. Delury, manager of the Pacific Telephone and Telegraph Company. He estimates the increase in population on three factors—registered voters, school children and telephones.

Using the census figures San Francisco has a telephone for every three persons. Mr. Delury states that this ratio is not great enough, but that there is a telephone for every four people. He bases this conclusion on the fact that New York and Chicago have but one phone for every sixteen persons. The following figures were used in preparing the estimate:

Registered voters—Known factors, 216,640; conversion factors, 3 persons per registered voter; estimated population, 649,920.

Average daily school attendance—Known factors, 53,627; conversion factors, 11.6 persons per school child; estimated population, 622,069.

Telephones—Known factors, 169,041; conversion factors, 4 persons per telephone; estimated population, 676,164.

Colorado Coal Strike Brings Out State Rangers

With 180 state rangers on duty guarding the coal mines in Huerfano and Las Animas counties, Colorado, little change in the number of coal strikers is reported. The Colorado Fuel and Iron Company has announced a reduction in wages for thirteen of its mines and a general walk-out has been precipitated. Threatened outbreaks on the part of the miners necessitated the calling out of a part of the state ranger force. Latest reports indicate that there will be a sympathetic strike in the Canyon City district unless a settlement is effected in the near future.

B. C. Power Companies Inter-link Transmission Lines

Interconnection between the West Kootenay Power and Light Company, British Columbia, and the Okanagan Power Company, Washington, has practically been arranged. The latter company's plant is located north of Oroville while the West Kootenay company's plants are at Bonnington Falls. The connection will benefit Penticton, Summerland and Kelowna which are or soon will be served by the West Kootenay company although these places are within 45 miles from the Okanagan Power Company's territory. The West Kootenay company is about to begin construction of its high tension line through Naramata to Kelowna and next summer will construct a branch to Summerland.

Resolution for New Constitution for P. C. E. A. Announced

The Pacific Coast Electrical Association, affiliated with the N. E. L. A., which was the Pacific Coast Geographic Division of the national association until the recent meeting at Del Monte, Cal., when the name was definitely changed, has announced the five general principles under which a committee of five will work in drawing up a new constitution for the organization. The committee, which will be appointed by President A. B. West in the near future, will report at the April meeting of the association to be held in Riverside, Cal. The principles under which the committee will work follow:

1. That no interpretation of the revision of the constitution be taken to mean that there would be any withdrawal from the national association in the support of its activities.
2. That the name be changed to read Pacific Coast Electrical Association affiliated with National Electric Light Association as Pacific Coast Geographic Division.
3. That employees of municipally owned power plants be admitted as associate members.
4. That consideration be given to the revision of the present basis of dues paid by contractor-dealer and jobber members.
5. That consideration be given to the eligibility of all grades of membership to all offices of the Association.

Great Western to Supply Power to Hutchinson Mills

When the entrance of a new utility into a field will result in greater industrial development, it will not be excluded according to a decision handed down by the California Railroad Commission in the controversy between the Pacific Gas and Electric Company and the Great Western Power Company over the supplying of power to the mills of the Hutchinson Lumber Company of West Virginia in Butte county. The company contemplates using electric power in both logging operations and in the mills and the account will amount to approximately \$60,000 annually for power alone. After carrying on negotiations, the lumber company decided to purchase the power from the Great Western. Later this utility persuaded the firm to completely electrify its plant.

In the controversy before the Commission, the Pacific Gas and Electric Company charged that the competitors were duplicating service in a field already served by them.

The Kern River Power Company, operating an electric light and power plant at Kern River, Cal., has lost its claim to the use of water brought to the plant in a canal through the national park, as the result of a decision of the United States Supreme Court. The court directed the cancellation of a right-of-way over national lands of a canal granted for irrigation purposes and used for power purposes. The company was directed to apply for a license to operate under the act of 1901.

S. F. Industrial Exposition Attracts Thousands

Over 500 Manufacturers Represented with Exhibits. December 5 Set Aside for Development League as Electrical Day

With exhibits of every type ranging from candy to steel transmission line towers, all manufactured in the bay district, the San Francisco Industrial Exposition opened at the Municipal Auditorium on November 19 and is being visited by more than 10,000 people daily. The exhibition will continue until December 10 and by that time it is expected that almost a quarter of a million residents of Northern California and visitors from other states will be apprised of the importance of San Francisco as an industrial center.

The electrical interests are taking an important part in the show and forty of the most effective booths are exhibiting electrical products. Power companies and electrical manufacturers are ably demonstrating the important role played by electricity in the industrial future of the city. However the electrical industry is saving its energy for the week of December 4-10, which has been termed "Electrical Week" throughout the state. At this time the Electrical Cooperative Campaign, the contractor-dealer associations and other allied organizations will lay particular stress on the value of electrical Christ-

mas gifts and this idea will be emphasized at the Industrial Exposition by the various exhibitors.

December 5 has been termed Electrical Day at the exposition and has been given over to the San Francisco Electrical Development League. Following a luncheon in the ball room of the Palace Hotel, the entire league membership will adjourn to the Municipal Auditorium where a special program will be staged by them in conjunction with the industrial show. Music and vaudeville will be special features. The booths comprising the electrical section will distribute special prizes throughout the day and an effort will be made to draw a record-breaking attendance. A similar program will be given in the evening.

More than 500 manufacturers are represented in the many displays and every inch of available space has been taken. Special days have been given to practically every civic and industrial organization in San Francisco and programs will be offered similar to that to be put on by the Electrical Development League.

Will Irrigate 100,000 Acres in Two Utah Counties

Over 100,000 acres of waste lands in Sanpete and Juab counties, Utah, will be made arable as the result of an irrigation project proposed by C. A. Gillette of Salt Lake City and revealed in his application to State Engineer R. E. Caldwell for the necessary water.

A total of 215,000 acre-ft. of water will be taken from small streams on the east side of the Wasatch range in Carbon and Emery counties and transported by canal and flumes over Soldier Summit. The canals would be forty feet wide and five feet deep. The project is one of the most extensive ever undertaken in the state, and would necessitate the moving of the Denver and Rio Grande Railroad branch line to Schofield. The Halloran-Judge interests of Salt Lake are believed to be involved in the projected scheme.

Southern Sierras Company to Erect Mill Creek Plant

The Southern Sierras Power Company has been issued a permit by the Federal Power Commission in Washington for the construction of a 3200-hp. plant on Mill Creek, a short distance from Forest Home in San Bernardino county. The permit reveals that the plant will operate under a head of 2050 ft., using water diverted to Mill Creek from four smaller streams by means of a wood conduit six miles long. A small reservoir having a capacity of 100 acre-feet will be constructed to equalize the flow of the water. The current will be delivered to the company's lines by a transmission line eight miles long which will operate at 87,000 volts. The water will be returned to Mill Creek to be used again by the Southern California Edison Company which has a plant located a few miles below Forest Home.

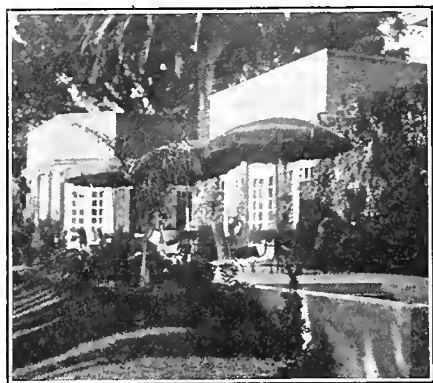
Kilbourne-Clark to Have New Seattle Factory

The Kilbourne-Clark Manufacturing Company whose Seattle plant was recently purchased by the Westinghouse Electric and Manufacturing Company to be used as a Northwestern distributing headquarters, will occupy a new factory which is being erected at the corner of First Avenue South and Spokane Street for Emar Goldberg. The new structure was designed by Harry H. James, architect, and is being built by the Stewart Construction Company. When completed it will be one of the most complete in the West and will employ approximately 300 men. The company will continue to manufacture electrical and wireless equipment.

S. F. Bay to Have Electrically Operated Ferry Boat

The Golden Gate Ferry Company, which contemplates the operation of a ferry between Sausalito and San Francisco, has contracted for the construction of an electrically operated ferry boat which will cost \$325,000. The vessel will have a capacity of 85 automobiles and 500 passengers. It will be equipped with two 500-hp. Diesel engine generating units capable of propelling the ship at a speed of 12 knots an hour. Aven J. Hanford, president of the company, declares that the use of electrical equipment will bring about great economies in operation.

Butte has just completed a successful drive to raise \$50,000 for its "Community Chest," a fund for the relief of the poor. The electrical industry was very active in the campaign, giving time and money liberally. Headquarters for the campaign were maintained in the general offices of the Montana Power Company.



WHERE ELECTRICITY RULES THE KITCHEN

The terrace of the Miramar Hotel at Santa Monica where every afternoon a luncheon cooked in a complete electric kitchen has brought fame to the hostelry.

Southern California Hotels Have Electric Kitchens

The efficacy of electric heat in the hotel and club kitchen has been demonstrated in Southern California where two complete kitchen installations have been made through the cooperation of the Edison Electric Appliance Company and the Southern California Edison Company.

At the Flintridge Country Club near Pasadena, the electric kitchen has adequately met the demands in entertaining at elaborate luncheons and as many as 150 guests have been served at one time. The total connected load is forty-two kilowatts and includes all classes of



The recently completed Flintridge Country Club near Pasadena, where an electric kitchen representing a connected load of 42 kilowatts serves many guests.

appliances ranging from a twenty-two kilowatt range to steam tables, a pastry oven and plate warmers.

The Miramar Hotel at Santa Monica is the second addition to the electric cooking field. This hostelry is one of the most noted of a large group of Southern California hotels, having been the former home of Senator Stone and the late William Gillette and still retaining the dignity and refinement of a private residence. The electric kitchen equipment is depended upon entirely in the serving of meals. The high standard of service possible with this modern installation has done much in adding to the popularity of the resort.

B. C. Cooperative League Has Adopted New Name

The Advisory Council of the British Columbia Electrical Cooperative Association at an open meeting held on the evening of November 3, 1921, decided to change the name of the organization from British Columbia Electrical Cooperative Association to the Electrical Service League of British Columbia.

The reason for this change was the misunderstanding of the term "Cooperative Association" in the minds of some members of the industry who could not separate activities of such an association from the activities of a cooperative buying or price fixing organization.

It was further felt that the similarity between the name of the central station and the cooperative association might be harmful to the activities of the cooperative association.

The new name of the organization, viz., "Electrical Service League of British Columbia," follows the precedent set in the Pacific Northwest.

The activities of the organization under the new name will continue as before, but it is hoped that the new name will express to the public the real purpose of the organization.

The proposed electrical show which was to have been held in Yakima under the auspices of the Northwest Electrical Service League, Dec. 9-10, has been postponed indefinitely, according to A. J. Gladson, head of the Yakima Electrical Contractors and Dealers. Inability to secure the State Armory for the show is given as the reason for postponement.

Value of P. G. & E. Properties Set as \$119,834,886

The valuation and rate hearing to establish permanent rates for the Pacific Gas and Electric Company, before the California Railroad Commission, has brought out interesting facts regarding the amount of money this company has invested in the state at the present time. W. G. Vincent, executive engineer for the company, in the summary of valuations prepared by the company pointed out that the reproduction cost of the company's system, estimated to consume a five-year period prior to June, 1921, is \$119,834,886. The historical cost, based on actual expenditures as shown by the company's records is set at \$94,354,976. Both totals include the Sierra and San Francisco Power Company, which is being operated by the Pacific Gas and Electric Company under lease. The valuations are for the physical and tangible properties and do not include such items as franchises, water rights, materials and working cash capital.

Announcement has been made by the Arkansas Valley Railway, Light and Power Company that work on the \$1,000,000 central station at Pueblo, Colo., will be resumed immediately. Construction of the plant ceased at the time of the Pueblo flood in June and for a time it was believed that the work would be abandoned. Assurance that flood prevention plans were being prepared whereby the section of the city in which the plant is located will be protected from future disasters is believed to have been the cause for the resumption of activities.

New Power Projects Revealed in Applications for Water

That the Crocker Estate Company of San Francisco is contemplating engaging in the hydroelectric power business in Amador county, California, is indicated in a series of applications for water filed with the State Water Commission, by J. W. Preston, Jr., representative for the estate in that county. The Crocker Estate has large mining interests in Amador county in addition to large holdings suitable for cultivation. The application for water is taken as an indication that the company intends to irrigate this land and at the same time to use the water in the generation of power. The applications as announced by the Water Commission follow:

J. W. Preston, Jr., San Francisco, Cal., 275 cu. ft. per sec. direct diversion and 300,000 acre-ft. storage from North Fork Mokelumne river and Sutter creek, Amador county, for power purposes. Amount of power to be developed, 19,050 t.h.p. Diversion by means of tunnel six miles long.

J. W. Preston, Jr., San Francisco, Cal., 275 cu. ft. per sec. direct diversion and 160,000 acre-ft. storage (per annum) from North Fork Mokelumne river, Amador county, for irrigating 50,000 acres. Diversion by means of tunnel and canal approximately six miles long.

J. W. Preston, Jr., San Francisco, Cal., 275 cu. ft. per sec. from Sutter creek, Amador county, tributary of Dry creek, for power purposes. Amount of power to be developed, 18,400 t.h.p. Diversion by means of canal and pipe line.

J. W. Preston, Jr., San Francisco, Cal., 400 cu. ft. per second from Cole creek, Bear creek, Beaver creek, Amador county, for power purposes. Amount of power to be developed, 55,000 t.h.p. Diversion by means of canal and pipe line.

Oregon Dedicates New \$1,400,000 Irrigation Project

The dedication of the Savage rapids irrigation dam six miles east of Grants Pass, Oregon, on the Rogue river, on November 5, brought to a realization the dreams of a quarter of a century and marked a new era in the progress of this community toward one of the foremost agricultural districts in the state.

The Savage Rapids irrigation dam is the center of the Grants Pass irrigation district and will provide water for 16,000 acres of land, 12,000 acres being already included within the district. The total cost of the project which includes 42 miles of canals, 1.7 miles of pipe line, diversion dam and power plant capable of developing 1700 hp., will be approximately \$1,390,000.

Following the completion of the installation of four miles of 8½-foot pipe for the Power Construction Company of Vermont, in which approximately 2,000,000 feet of Washington Douglas fir was used, comes the announcement of the Continental Pipe Manufacturing Company of Seattle that it has just signed a contract for one-half mile of 36-inch wood stave pipe at Erie, Pa., and one-half mile of 30-inch pipe at Cookeville, Tenn. Both of these pipe lines are to be used as penstocks in connection with the development of hydroelectric power. The purchasers are the Erie County Electric Company, Erie, and the Cookeville Power Company, at Cookeville.

A concrete dam being built for the power plant on the Tulalip Indian Reservation, just poured, recently went out, following a heavy rainstorm. Loss estimated at \$30,000.

Plan the Formation of Northwest Foreign Trade Conference

Plans for holding a big meeting of representatives of all ports, cities, commercial bodies, railroads, steamship lines, and other interests of the Pacific Northwest in Tacoma, December 8-9, for the purpose of forming a Pacific Northwest Foreign Trade Conference, are being formulated. The conference will be devoted to subjects having to do with problems of foreign commerce peculiar to the Northwest, and subjects will include all phases of the American shipping problems, as subsidies and free Panama tolls; the American valuation plan of collecting duties; the relation of importers to exporters' interests; federal tax measures and their application to American traders in foreign countries; financing foreign trade, and many others. The committee on the program is composed of Henry Shaw and E. P. Kemmer, Tacoma, Roy O. Hadley and W. B. Henderson of Seattle, and Ira White of Portland.

Drastic Cuts Announced in Rail and Water Freight Rates

Drastic reductions in freight rates on nearly all commodities ranging from ten to forty per cent have been announced by the Southern Pacific and Western Pacific railroads. The rates apply to grain and grain products, fresh, dried and canned fruits, meat, cattle, and many lines of staples. Machinery, tools and automobiles are also included.

The reductions on the Western Pacific apply to both eastbound and westbound shipments and average approximately 12½ per cent. Those on the Southern Pacific average almost 20 per cent.

At the same time three San Francisco steamship companies have announced reductions on canned and dried fruit consigned to Europe. Other reductions are expected in the near future.

China to Have Immense Radio Station at Shanghai

Negotiations between the Chinese government and the Federal Telegraph Company have been completed whereby China will have within the next two years a complete network of radio communication facilities, which will include one station as large as any in the world. The contract, which was announced by Barnes Moss, covers the erection of five radio stations, the first of which will be located in Shanghai. The Shanghai station will consist of six towers each 1006 ft. in height. The equipment will include two 1000-watt Federal arcs and will operate on the single wave system. The construction is under the direct supervision of R. R. Beal, engineer in chief of the company, and a prominent figure in American radio development.

At the annual meeting of the City Attorneys' Association of Southern California in Los Angeles recently resolutions were passed calling upon the State Railroad Commission to immediately reduce rates for electricity throughout the entire southern part of California.

Gigantic Merger of Steel Interests Contemplated

Plan Proposed by Utah Capitalist Involves \$25,000,000 and Would Assure Western Manufacturers of Steel Supply

A western steel industry capable of supplying the demands of every class of manufacture and designed to place the district west of the Rocky Mountains on a competitive plane with eastern manufacturing centers is assured if plans for a \$25,000,000 merger of iron, coal and steel interests, announced by L. R. Rains of the Carbon Fuel Company of Salt Lake City, are carried through. According to Rains the merger has been proposed so that the West might be supplied with a limitless supply of steel and thus be in a position to compete with the manufacturing plants of the Atlantic Coast and Middle West, a feat hitherto impossible on account of the meager supply of steel and the high freight rates from eastern sources of production.

Under the contemplated plans, it is proposed to erect near Salt Lake City, a 500-ton blast furnace which will be capable of supplying large quantities of pig iron to the steel mills of the Pacific Coast. It is estimated that in excess of three hundred million tons of iron ore are available in Iron county, Utah, immediately adjacent to the Carbon county coal fields and large deposits of lime stone near Great Salt Lake. Two railroads would be built to the mines and a huge steel factory constructed in Salt Lake City.

The California companies interested in the deal, according to Rains, are the Columbia Steel Company at Pittsburg, of which Wigginton E. Creed is president, and the Southern California Iron and Steel Company of Los Angeles, which is headed by A. C. Denman, Jr. Other California men interested in the merger are:

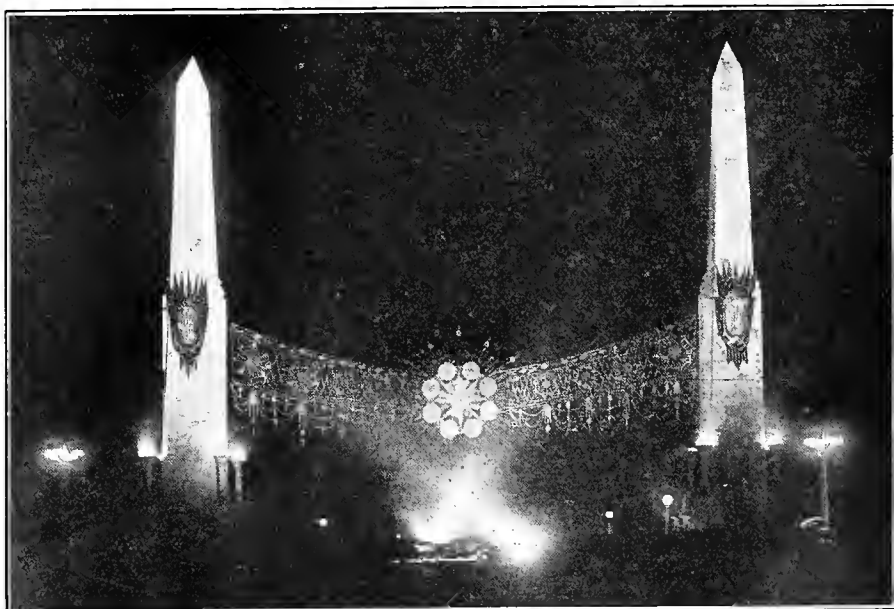
William R. Staats, Russell McD. Taylor, S. K. Rindge, A. W. Grier, E. G. Pratt and C. G. Henderberger, all of

southern California, and D. H. Blotchford of the Columbia Steel, Joseph Sloss, J. D. Grant, A. E. Boynton, W. C. Hammon and Herbert Fleishacker of San Francisco.

The Utah corporations and individuals figuring in the negotiations include, besides Rains, A. C. Ellis, Jr., president of the Utah Coke and Coal Company; W. W. Armstrong, president of the National Copper Bank of Salt Lake City; Duncan McVichie; Captain Raddatz, president of the Tintic Standard Mining Company, and L. B. McCornick, all of Salt Lake City.

Copper in quantities sufficient for reclaiming exists in the waters in the gulches on the property of the Utah Copper Company at Bingham, according to a series of applications filed with State Engineer R. E. Caldwell, by G. C. Earl, engineer for the company. In his application for water, Mr. Earl points out that rain and water from melting snow percolates through the mountains of copper ore on the property and dissolves the soluble copper carbonates and sulphides in small percentages. It is planned to collect this water and precipitate the copper contents.

The Utility Manufacturing Company, a South Dakota concern, has purchased the factory and holdings of the Washington Ornamental Iron Works and the Architectural Iron Works in Spokane and will consolidate the operations of the three companies under one plant, which will be built in the near future. It is understood that already quantities of machinery have been purchased in Chicago. Earl Cummings of Spokane is the president of the newly organized firm.



To the hundreds of thousands who visited the Panama-Pacific Exposition in San Francisco in 1915, this lighting effect should prove familiar. It is a part of the five billion candlepower display at Washington, D. C., on Armistice Day. It consists of a jeweled curtain bearing the insignia of the Allies, hung between two 85-ft. jeweled obelisks, all indirectly lighted. It was designed by W. D'Arcy Ryan of the illuminating engineering laboratory of the General Electric Company. Mr. Ryan was responsible for the brilliant lighting effects at the 1915 Exposition.

League of the Southwest to Discuss Colorado River

Eyes of West Turned Toward Riverside, Cal., where Experts of National Repute will Offer Testimony on Project

The eyes of the West have turned from President Harding's Disarmament Conference and are centered on Riverside, Cal., where, on December 8, 9 and 10, the League of the Southwest, representing eight southwestern states, will convene for the purpose of discussing the question of the development of the Colorado River.

Having taken no stand on the question as to whether the immense power resources of the Colorado should be developed by the national government, a league of the states affected, a single state, a municipality or a private corporation, the League is meeting for the purpose of thoroughly investigating the situation with a view of hastening the development of the project and the effecting of suitable flood control for the districts which have suffered heavy damage from the overflow of the great body of water in past years.

The meetings will be held in the auditorium of the Polytechnic High School at Riverside, while the headquarters will be located at the Glenwood Mission Inn.

No definite program has been announced but Arnold Kruckman, secretary of the league, has issued the following list of notables who will attend the sessions and take part in the discussions:

Dr. R. B. Von Klein Smid; Governor William D. Stephens of California; Mayor Horace Porter of Riverside, Cal.; C. E. LaRue, U. S. Geological Survey, pioneer engineering explorer of the Colorado Basin; Arthur P. Davis, Director of U. S. Reclamation Service; W. E. Creed, president of the Pacific Gas and Electric Company, San Francisco; John B. Miller, president of the Southern California Edison Company, Los Angeles;

William Mulholland, chief engineer of the City of Los Angeles Bureau of Power and Light; Mayor George F. Cryer, of Los Angeles; W. J. Loring of San Francisco.

Richard E. Sloan, former governor of Arizona; Governor Emmet D. Boyle of Nevada; Simon Bamberger, former governor of Utah; Governor O. H. Shoup of Colorado; Victor E. Keyes, Attorney-General of Colorado; James A. Marsh, city attorney of Denver; L. Ward Bannister, of Denver Civic and Commercial Association; Dolph Carpenter, Colorado member and creator of the Colorado River Interstate Commission Act; W. R. F. Mills, former mayor of Denver; H. K. Wells, president Durango (Col.) Exchange; Frank C. Emerson, state engineer of Wyoming; Hon. F. B. Davis of New Mexico; Senator Henry F. Ashurst of Arizona; Dwight B. Heard of Phoenix; Bulkeley Wells of Denver and New York City.

O. C. Merrill, executive secretary of the Federal Power Commission; Senor Don Francisco S. Elias, Governor of Sonora, Mexico; Senor Don E. Ybarra, Jr., Governor Northern District of Lower California, Mexico, spokesman for commission appointed by the Secretary of Foreign Relations at the direction of President Obregon of the Mexican Republic; Moses P. Kinkaid, chairman Irrigation and Arid Lands Committee, Congressman from Nebraska; Robert L. Owens, Senator from Oklahoma; Joseph Nickerson, president Imperial Irrigation District; Ed. F. Williams, representing Palo Verde Valley, California organizations; Dr. S. S. M. Jennings, president Coachella Valley County Water District; Francis S. Viele, Prescott, Ariz.; Mrs. A. A. Winter, president General Federation of Women's Clubs.

William Sproule, president Southern Pacific Company; William B. Storey, president Atchison, Topeka & Santa Fe Railroad; Charles P. Squires, representing Las Vegas, Nevada; Frederick L. Long, secretary Water Power League of America, New York City; Dr. F. H. Newell, first head of U. S. Reclamation Service, Washington, D. C.; Albert B. Fall, Secretary of the Interior; Herbert Hoover, Secretary of Commerce; George H. Maxwell, secretary National Reclamation Association; James A. Johnson, president Northwestern States Reclamation League; A. J. McCune, state engineer of Colorado; R. E. Caldwell, state engineer of Utah; W. F. McClure, state engineer of California, and others.

S. F. Electrical League Sends Message to Harding

The San Francisco Electrical Development League recently dispatched a telegram to President Harding congratulating him upon the proposals submitted by the American delegates to the Limitation of Armament Conference. Louis F. Leurey made the suggestion which resulted in the sending of the message. The telegram follows:

San Francisco, Nov. 14, 1921.

Warren G. Harding,
President of the United States,
White House, Washington, D. C.

The San Francisco Electrical Development League composed of seven hundred men representing the electrical industry of Northern California at a meeting held today voted unanimously to extend our congratulations to yourself and Secretary Hughes for the splendid manner in which you have exemplified the American conscience before the eyes of the world at the opening of the disarmament conference. We believe that all real Americans are heart and soul behind you in the program which you have initiated. Our best wishes for the full realization of your ideals.

SAN FRANCISCO ELECTRICAL
DEVELOPMENT LEAGUE

Clyde L. Chamblin, President.
J. W. Mahoney, Secretary.

Utah will open its third electrical home at Provo about December 15. The two preceding homes, those at Ogden and Salt Lake City, attracted a large attendance of visitors and the Rocky Mountain Electrical Cooperative League plans to open still another home in the spring.

The Denver Section of the A. I. E. E. entertained women guests on November 19 at a dinner and radio telephone concert, following which the intricacies of a telephone operating exchange were demonstrated on a portable board. John G. Greenawalt, publicity manager of the Mountain States Telephone and Telegraph Company, was the principal speaker, addressing the gathering on "The Public and Public Utilities."

Jobbers' salesmen in the Northwest have formed an auxiliary to the Northwest Electrical Service League for the purpose of promoting organization and closer cooperation in their ranks. On November 19 the jobbers' salesmen met in Seattle for this purpose and on November 26 a similar meeting was held in Portland. Spokane has also joined the movement.

Both Calaveras and Amador counties are affected by the application filed by Beckman and Linden, San Francisco engineers, which contemplates the irrigation of 200,000 acres of lands with water taken from the Mokelumne and Calaveras rivers.

The War Finance Corporation has advanced a loan of \$300,000 to a California cooperative association engaged in the growing and canning of fruits and vegetables, according to an announcement from Eugene Meyer, managing director.

Books and Bulletins

WASTE IN INDUSTRY

By the COMMITTEE ON ELIMINATION OF WASTE IN INDUSTRY of the FEDERATED AMERICAN ENGINEERING SOCIETIES. Cloth, 6¼ by 9¼, 409 pages. Published by the McGraw-Hill Book Co., Inc., New York.

Characterized by Secretary of Commerce Herbert C. Hoover as an investigation which has paved the way for a new advance in American industry, this book is one of the most important publications from an engineering and industrial standpoint of the past decade. Within less than five months, the committee of seventeen investigated six typical industries for an assay of waste. The volume contains a summary of the detailed reports made by the engineers, the field reports gathered by them, and a series of general reports on such subjects as unemployment, strikes and lockouts, legal machinery for adjusting disputes, industrial accidents, health of industrial workers, eye conservation and purchasing and sales policies. The six industries studied included the building industry, men's clothing manufacturing, shoe manufacturing, printing, metal trades and textile manufacturing. A complete discussion of the scope and suggestions in the report will be found on page 228 of the September 15 issue of the Journal of Electricity and Western Industry.

AMERICA'S POWER RESOURCES

By CHESTER G. GILBERT and JOSEPH E. FOGUE. Cloth, 7½ by 5, 12mo., 325 pages, 37 charts and illustrations. Published by the Century Co., New York.

The book is an enlightening discussion of the economic significance of coal, oil and water power, written, perhaps more for the student than the practical man, as the treatment is semi-academic. The authors draw attention to the wasteful method of utilizing the power resources of the country and to the startling fact that they will soon be exhausted. The book represents years of thought and attention to the civic and industrial problems involved in America's power resources. The many helpful suggestions on conservation are worthy of thought on the part of citizens, business men and students of industrial conditions. It is profusely illustrated with charts, diagrams and photographs.

The EMF Electrical Year Book, an encyclopedia of current information about each branch of the electrical industry with a dictionary of electrical terms and a classified directory of electrical and related products with their manufacturers in the United States and Canada, has been published by the Electrical Trade Journal Publishing Company of Chicago. The book was designed to meet the growing need for a compendium of electrical developments and ably meets this need. It is a highly complete and convenient reference book and will be published annually.

Meetings of Interest to Western Men

Merchandising Methods Discussed by Contractor-Dealers

At a well attended and enthusiastic meeting of the Northern Section of the California Contractor-Dealers' Association held in Bakersfield last week, the subject of better merchandising and a closer cooperation between the several branches of the industry were the principal themes.

At the general session held Saturday afternoon, November 26, in the Southern Hotel, the good will advertising campaign of the Pacific States Electric Company was thoroughly explained by Dave Harris, vice-president and general manager of that company, and by J. B. Barnhill of the firm of Evans & Barnhill, who conducted the investigations and laid out the advertising campaign of the Pacific States Electric Company.

In brief, the campaign which is at present being put on in Southern California at an expenditure of \$45,000, is based on the assumption that the greatest need of the hour is to educate the general public to the desirability of transacting their electrical contracting business with established and reputable contractors and dealers. Mr. Barnhill pointed out that in Southern California 65 per cent of the outlets installed were installed by association contractors and that the number of outlets installed in each installation by an association contractor was practically double that installed by a non-association contractor, thus proving beyond question that the contractors in the association are working in the greatest harmony with the other branches of the industry.

The matter of a suitable emblem for electrical contractors and a code of ethics under which they will operate were discussed and a committee appointed to give these matters final consideration for report at the next meeting, which is to be held in Sacramento late in January.

Following the banquet, at which over sixty members and visitors were present, a lively program of addresses was conducted under the chairmanship of Robert Eltringham, manager of the California Electrical Cooperative Campaign. H. L. Miller of Pasadena told of the good results he had obtained through the placing of 30,000 blotters among the schools and school children in Pasadena. R. A. Balzari of the Westinghouse Electric and Manufacturing Company emphasized the need of hard conscientious work in the securing of new business. L. E. Voyer of the General Electric Company pointed out that a great opportunity for more business and increased good will lay in the sell-

ing of the right voltage lamp in each community and the use of salesmanship and horse sense to increase the volume of sales. Don Ray of the Pacific Gas and Electric Company discussed the subject of electric ranges and stated that a plan would be evolved which would react to the benefit of the contractor-dealers and greatly stimulate the sale of this class of appliance.

A masterful address on salesmanship was delivered by Mr. Barnhill, who stated that if contractor-dealers would concentrate on two things their problems would be easier. First, that there was no money to be made by buying but only by selling; and, second, that a careful study should be made of the people who are helping make the sales, such as the clerks and other workers, in order to obtain their heartiest support, his idea being to sell them the selling idea rather than selling them the merchandise.

The meeting was closed by the showing of a reel of moving pictures of the construction of incandescent lamps.

A. S. M. E. to Hold Annual Meet in New York City

A five-day annual meeting which will be attended by approximately 2000 engineers from all parts of the country will be held in New York City, December 5-9, when the American Society of Mechanical Engineers meets at that time. The investigation of industrial waste recently completed by the American Engineering Council of the Federated American Engineering Societies will be the chief topic of discussion. Robert Sibley, editor of the Journal of Electricity and Western Industry, and one of the vice-presidents of the society, will attend the meetings from San Francisco. W. W. Hanscom will represent the San Francisco section of the Society.

Seattle Engineers Hold Open House in New Club Rooms

The Engineers' Club, Seattle, on November 11, entertained approximately 100 members and guests at an "Open House" in the new College Club quarters, 5th Ave. and Seneca, which the Engineers' Club has taken over for its new home. Dinner was served to the guests. On November 10, the club entertained as its guest E. R. Adams, of Alexander and Baldwin, Ltd., owners of extensive plantations, shipping and other industries in the Hawaiian Islands. Mr. Adams addressed the club on industrial conditions in the island territory.

Supply Jobbers' Sessions at Del Monte Successful

The Pacific Coast Division of the Electrical Supply Jobbers' Association held one of the most successful meetings since its inception when members gathered at Del Monte, Cal., on November 11 and 12 to discuss problems relative to that branch of the electrical industry. Owing to the fact that the Pacific Coast Electrical Association, affiliated with the N. E. L. A., was in session at the same time, the attendance at the jobbers' meetings was large.

The chief topics of discussion were the proposed \$500,000,000 water power act for California and the subject of credits. A. B. West, president of the P. C. E. A., in pointing out that the act which proposes to place California as a state in the power business has no precedent, characterized the measure as one which would socialize industry and power. He traced the development of municipal ownership, showing what this form of control had failed to do. Judge Craig, of the Southern California Edison Company, in further discussing the bill, stated that it was not a legislative act, but an amendment to the state constitution, which could only be changed, if once in effect, by the vote of the people on another amendment.

"Credits" was the theme of a discourse by C. W. Banta, vice-president of the Wells Fargo Nevada National Bank of San Francisco. Mr. Banta pointed out that a bank, in establishing credit with a client, first investigates the antecedents of the situation, then the reputation of the individual, and finally his character as a business man. Similarly, he declared, a jobber in allowing credit to a contractor-dealer, should investigate the business of the latter, looking up his past readiness to pay money owed, determining whether his business was operated under a proper system of accounting, investigating his assets and liabilities and, lastly, never allowing credit to exceed five times the average of the client.

The meetings were presided over by E. O. Shreve, president of the Pacific Coast Division of the association. Among those who attended were:

Floyd Averill	W. B. Sawyer
Albert Elliot	T. E. Bibbins
C. C. Hillis	Charles Listenwaller
A. E. Wishon	W. S. Berry
George Curtis	Newton Graham
Harry Harper	Allen Jones
A. W. Childs	Samuel Taylor
Earl Alexander	H. H. Daley
E. B. Criddle	Judge Craig
P. H. Booth	E. B. Hawley
B. S. Manuel	J. A. Vandergrift
A. E. Rowe	H. B. Sherman
D. E. Harris	C. E. Wiggins
R. M. Alvord	Geo. E. Armstrong
Robert Sibley	L. H. Newbert
S. J. Lisberger	J. B. Black
Harry Garbutt	G. B. Rosenblatt
R. A. Balzari	W. B. Shepherd
C. W. Banta	

Final reports on the membership drive staged by the California Development Association showed that a total of 306 new members have been secured during the recent drive. A goal of five hundred new members had been set for this campaign, but according to James H. McDonough, the president of the Association, an attempt will be made during the next two months to secure 200 additional members in the interior cities of the state.

COMING EVENTS

LEAGUE OF THE SOUTHWEST

Riverside, Cal.—December 8-10, 1921

GOVERNMENT HEARING ON BOULDER CANYON PROJECT

San Diego, Cal.—December 12, 1921

ANNUAL MEETING, A. S. M. E.

New York City, N. Y.—December 5-9, 1921

S. M. Kennedy, vice-president of the Southern California Edison Company, was tendered a dinner by the department heads of the company in Los Angeles recently in appreciation of the honor paid him by Stone and Webster, whose convention he went to Boston to address. The dinner also marked the completion of twenty years in the service of the Edison Company. During these twenty years, Mr. Kennedy has devoted his time to better service for the public and as a result he today stands as the acknowledged leader in this phase of public utility business. At the conclusion of the dinner he was presented with a de luxe edition of his book, "Winning the Public," autographed by the guests.

C. B. Hawley, vice-president of the Intermountain Electric Company, Salt Lake City, is a recent San Francisco visitor, where he was conferring on future developments contemplated by his company.

Rufus G. Gentry, assistant commercial manager of the Denver Gas and Electric Company, has been re-elected treasurer of the Colorado Manufacturers' Association, in recognition of his ceaseless efforts for the civic and industrial betterment of his state. Not only one of the most active figures in the electrical industry, as indicated by his position on the advisory committee of the Electrical Cooperative League, he is a member of the Denver Civic and Commercial Association and the Lion's Club. For nine years he was secretary of the board of trustees of the Colorado



R. G. GENTRY

Women's College and is at present a member of that board. For twenty-one years he has been a member of the sales department of the Denver Gas and Electric Company and under his direction the sale of appliances has increased 500 per cent. An idea of the high regard which his fellow workers hold for him can be gleaned from the following quotation from a Denver paper: "Mr. Gentry is one of those men who is endowed with the rare vision of things pertaining to civic affairs and is always ready to render his services in the unceasing campaign of education for the development of Colorado's industries and resources. He has done much toward creating that necessary feeling of good will of the business men of the city to public utilities which the progressive central station man is always striving for."

Personals

Carl E. Heise, district manager for Westinghouse Electric and Manufacturing Company, has returned from an eastern trip to the manufacturing centers of his company.

O. A. E. Ostoff, of the Chicago offices of the Western States Gas and Electric Company, has been in California discussing with the local officials of the company the proposed improvements which the concern contemplates in the San Joaquin valley.

G. W. Barker, formerly in the electrical home department of the Great Western Power Company, with headquarters at Oakland, California, is now in charge of the electrical department of Holbrook, Merrill and Stetson in San Francisco.

E. C. Headrick, president of the Denver Association of Contractors and Dealers, is one of the members of the building committee which is in charge of the construction of the first electrical home in Denver. Other members of the committee are T. O. Kennedy, general superintendent of the Denver Light and Gas Company, and A. C. Cornell, manager for the Intermountain territory for the Western Electric Company.

Dr. Tatsumi Mochida and Jiuji G. Kasai, representatives of the Fuyigasu Spinning Company of Tokyo, are in San Francisco for the purpose of making a study of the hydroelectric developments of California. The company operates all of its plants, which have an annual output valued at \$50,000,000, by electricity, and in addition supply light and power to the city of Yokohama. The men are in this country with a view of purchasing equipment for additional plants contemplated by their company.

O. D. Young, one of the vice-presidents of the General Electric Company, and a well known figure in Pacific Coast circles, has been decorated with the Fourth Order of Merit by the Emperor of Japan in recognition of his service in furthering the development of the electrical industry in Nippon.

P. S. Coombs, chief engineer of the city of Chicago, highly praised the port facilities and traction system of San Francisco during a recent tour of inspection of Pacific Coast cities. Chicago, he stated, is contemplating waterfront improvements in the near future.

P. A. Brown of the Electrical Automatic Appliance Company Denver, has offered to the state of Colorado a captured German airplane and 77 m.m. field piece which he recently secured in a carload of war souvenirs consigned by the French Republic to the University of Colorado. Because of the inability of that institution to pay the freight charges, Brown bought the material for the charges and is now displaying considerable of the material in his place of business.

B. B. Bessensen, former sales manager of steam and hydraulic power equipment for J. D. Hull, Seattle, has recently been appointed as an instructor in the electrical engineering department of the Oregon State Agricultural College at Corvallis.

Charles D. Marx, professor of civil engineering at Leland Stanford University, together with Professors W. F. Durand and C. B. Wing, his associate members on the Engineering Council at that institution, is receiving congratulations from all parts of the West on the completion of the remarkable stadium at Stanford, which held 60,000 excited people at the recent game be-



C. D. MARX

tween the University of California and the Palo Alto institution. The vision and daring which resulted in the radical departure from ordinary stadium construction and the adoption of the excavation and dirt wall type, have been amply justified by the speedy completion of the athletic field and the ultimate beauty of the structure. Professor Marx is chairman of the joint engineering council of San Francisco, past president of the American Society of Civil Engineers and a very active figure in the engineering and civic matters of the West. He is also chairman of the plans and proportions committee for the proposed Engineering and Industry Building of San Francisco.

Carl Bjuke, civil engineer and lieutenant in the corps of Royal Engineers of Stockholm, Sweden, is a recent San Francisco visitor. Mr. Bjuke is on the Royal Swedish Board of Waterfalls, and is interested in the building of dams for hydroelectric development.

W. A. J. Guscott, J. Fischer and J. W. Hancock, prominent members of the Denver Contractor-Dealers' Association, have been elected to supervise the wiring of the electrical home now being constructed in that city under the auspices of the Electrical Cooperative League.

Carl M. Heintz, western sales supervisor of the Westinghouse Electric and Manufacturing Company, addressed the advisory committee of the Denver Electrical Cooperative League at the time of his recent trip to that city.

C. B. Blessing, president of the Blessing Electrical and Manufacturing Company of Cincinnati, is a recent San Francisco visitor. Mr. Blessing is making a tour of inspection of the West in the interests of his company.

George E. Andrews, former manager of Power and Electrical World, has been selected by the board of directors of the McGraw-Hill Company, Inc., New York, to take the newly created post of circulation director for the entire twelve publications of the company.

Morris Bien, assistant director of the United States Reclamation Service, expressed himself as being well pleased with the developments of the projects in the Southwest after a tour of inspection of the Yuma Valley, Yuma Mesa and Gila Valley projects in the vicinity of Yuma, Arizona.

James H. Mills of Great Falls, Mont., recently visited Butte to attend an important meeting of electrical luminaries. Afterwards with **H. R. Bargon**, Garfield Perier and **Frank Venable**, of the Montana Electric Company, he was an enthusiastic rooter at the School of Mines vs. Eaglewood football game.

Carlo Ferrari, general manager of the Societa Meridionale d'Elettricit  di Naples, Italy, is a distinguished San Francisco visitor. Signor Ferrari was sent here by his company to investigate the hydroelectric developments in California, as the most advanced section of the world in this respect.

Alvah Eames, superintendent of railway mails for the territory of Alaska, during a recent visit to Seattle, declared that one of the history-making epochs of the industrial and commercial West will begin when the last spike of the government Alaska railways is driven some time during December.

E. L. Strandberg, former structural engineer for the Vulcan Manufacturing Company of Seattle, has opened offices for private practice in the Pioneer Building, Seattle.

George Kidd, general manager of the British Columbia Electric Railway Company, Ltd., has been re-elected as chair-



GEORGE KIDD

man of the advisory committee of the Electrical Service League of British Columbia, which was formerly the British Columbia Electrical Cooperative League. Conceived but a little more than a year ago, the League, under the leadership of Mr. Kidd, has accomplished wonders in the spread of the cooperative idea in the industry in western Canada. Sales of electric appliances have increased enormously, shows and expositions have been held for the education of the public, and the contractor-dealers thoroughly organized and instilled with the spirit of cooperation, all under the helpful guidance of Mr. Kidd and his hard-working associates. It is not easy to predict what accomplishments will greet this growing organization during the coming year under the guidance of so experienced a leader.

H. W. L. Gardiner, vice-president of the McGraw-Hill Company of California, publishers of the Journal of Electricity and Western Industry, who is spending several weeks on a business trip through the Intermountain states, reports business conditions as having materially improved. He states that several new mills for silver, lead and gold mines are being installed in Utah, Idaho and Montana, and that the prospects are daily looking brighter for an early resumption of operations by the copper companies.

Lewis A. McArthur, general manager of the Pacific Light and Power Company, one of the most active members in the affairs of the Northwest Electric Light and Power Association, has been appointed to represent that division on the committee on rural lines of the N. E. L. A. Other Northwest men appointed to the same committee are **R. R. Easter** of the Northcoast Power Company, Hillsboro, Ore., and **J. F. Farquhar** of the Washington Water Power Company, Spokane. **H. H. Schoolfield**, chief engineer of the Pacific Power and Light Company, Portland, has been chosen to serve on the accident prevention committee of the national association.

Markham Cheever, general superintendent and chief engineer of the Utah Light and Power Company, Salt Lake City, took an active part in the recent meeting of the Technical Section of the N. E. L. A. held in San Francisco. It is to be remembered that Mr. Cheever is the chairman of the hydraulic power committee of the national association.

H. H. Schoolfield, chief engineer of the Pacific Power and Light Company, Portland, contributed materially to the discussions during the recent San Francisco sessions of the Technical Section of the N. E. L. A. While a member of the Northwest Electric Light and Power Association, Mr. Schoolfield acts as a connecting medium between that organization and the Pacific Coast association.

John B. Fisk, construction engineer of the Washington Water Power Company of Spokane, took an active part in the meetings of the Technical Section of the N. E. L. A. in San Francisco recently. Others from the Northwest who attended the sessions were **E. D. Searing**, construction engineer, and **R. R. Robley**, operating engineer, of the Portland Railway, Light and Power Company.

O. B. Coldwell, vice-president of the Portland Railway, Light and Power Company, and vice-president of the A. I. E. E., delivered a powerful message to the Utah section of the Institute recently when he addressed the members on "Characteristics an Engineer May Well Possess."

R. H. Ballard, vice-president and general manager of the Southern California Edison Company, painted a vivid picture of what hydroelectric development will do for the future of the Southwest when he inaugurated a series of weekly talks before the Chamber of Commerce at Pomona.

E. C. Van Diest has again taken charge of the affairs of the Intermountain Railway, Light and Power Company of Colorado Springs, as vice-president and general manager, to replace **E. J. Condon**, who has resigned.

E. N. Willis, well known in western engineering circles, has been appointed secretary of the Southwestern Electrical and Gas Association to fill the vacancy left by the resignation of **H. S. Cooper**. Mr. Willis was graduated in electrical engineering from the Lawrence Scientific School, Harvard University, in 1903 and spent the years following his graduation until 1911 with



E. N. WILLIS

the General Electric Company in the testing and construction departments. Later he was assistant sales manager of the Southwest General Electric and his position before his identification with the association was that of manager of the Houston office for Smith and Whitney, power plant engineers. He has been in close touch with public utilities throughout the Southwest for the past ten years, both from a commercial and operating standpoint, and his wide experience well qualifies him for the work of the Southwest Association.

W. C. Pickford, division commercial engineer for the Pacific Telephone and Telegraph Company, Seattle, presented helpful and interesting data to the electrical industry when he spoke before the November meeting of the Seattle Section of the A. I. E. E. on "Developing Studies Affecting Telephone Plant Design."

Obituary

John B. Crouse, one of the pioneers in the manufacture of electric lamps and a persistent advocate of the elimination of competition through cooperation, died at his home in Cleveland on November 6. Mr. Crouse was one of the founders of the National Electric Light Association and his influence and interest in the department of this organization devoted to lighting and illumination never waned. He was the first and only president of the National Lamp Works and at the time of his death was president of the Crouse-Tremaine-Kulas Company of Cleveland. As the father of the idea of cooperation in the electrical industry, he will be keenly missed by a host of business associates and friends.

E. S. Conrad, western district sales manager for the Square D Company, Detroit, Mich., manufacturers of Square D switches, has announced that his headquarters will be room 236, Rialto Building, San Francisco.

H. D. Binks, president of the Binks Spray Equipment Co., engineers and manufacturers of Chicago, is making a tour of inspection of the Pacific Coast cities, relative to his company's products.

S. A. Jacobucci has purchased the contractor-dealer establishment of Harry Barnes at Brighton, Colo., and announces that he will place the store on a standard with similar concerns in the Intermountain district by enlarging the stock.

The Electric Department Store has been organized in Ogden, Utah, as the result of the consolidation of the Adams Electric Sales Company and the Alta Electric Company. Offices, show rooms and sales rooms at 2336 Washington street, have been completely remodeled and new stock is being installed. C. S. De Hart, A. B. Williams, T. E. Greene, Charles Hartley and I. L. German are interested in the venture.

A. R. Hancock, whose contractor-dealer establishment was completely wiped out by fire at Willows, Cal., four months ago, has completed a new building at 135 S. Tehama street. Show rooms, offices and repair shop are strictly up to date and are a credit to the proprietor and the city.

Ralph Hersey has opened an electrical shop in the Court Block at Martinez, Cal., where he has installed a complete line of electrical appliances.

Westinghouse dealers in the Salt Lake district have started a united advertising campaign in conjunction with the Intermountain Electric Company to boost the sale of electric appliances for Christmas. The campaign has been worked up by advertising experts and will cost several thousand dollars.

The Re-fill-it Broom Manufacturing Company, Boston, has placed on the market a new type of everlasting broom especially suitable for central stations, industrial plants, and the like. The feature of this broom is that any type of filler may be placed in the handle and as fast as one filler wears out, another may be replaced.

The Carmean Electric Company, Kansas City, Mo., will place on the market on December 15, a new type of motor driven electric heater to be known as model No. 9. The device applies the principle of housing an intense heat in a small area and distributing it by means of a motor driven air impeller. It can be run as a fan alone, a heater, or a combined heater and fan at two different degrees of heat.

The International Filter Company, Chicago, manufacturers of water softening and filtration plants, has opened a California branch office at 819 Monadnock Building, San Francisco. Philip Schuyler will be in charge of the offices.

The Aetna Electric Appliance Company, Boston, has prepared for the trade interesting booklets showing diagrams of the Aetna water heating system, which are ready for distribution.

The Delta-Star Electric Company, Chicago, has announced a general reduction in prices on equipment described in bulletins thirty to thirty-seven, issued by them.

Manufacturer, Dealer, and Jobber Activities

The Jewell Electrical Instrument Company, Chicago, has issued a memorandum book known as the "Jot Book" to be used as an advertising medium.

The Charles A. Dowd Sales Company, Pacific Coast manufacturers' representatives, is placing in the hands of contractor-dealers a new device known as Rawlplugs, perfected by J. J. Rawlings, noted British engineer. The device permits the placing of a screw in any type of material so that it will hold permanently. Numerous unique demonstrations of the product are being arranged for both engineers and the trade.

The Automatic Electrical Machine Company, San Francisco, who have perfected a series of automatic time clocks and dating machines, and automatic cancelling machines, are preparing to erect a factory in Oakland for the manufacture of their products. Harry G. Lundgren is the inventor of the device and is president of the company.

L. P. Van Atta, former sales manager for the Pacific States Electric Company, San Francisco, announces a "Personal Service" for electrical dealers with offices at 408-410 New Call Building, San Francisco. A general dealer agency will be conducted by Mr. Van Atta with a view of eliminating many of the inconveniences to dealers outside the city.

The Automatic Electric Water Heater Company, Warren, Pa., has announced that a new model Sepco improved circulation type water heater has been placed on the market. The new device almost totally eliminates radiation losses. W. F. Clark, president of the company, is visiting the Pacific Coast at the present time for the purpose of establishing western branches.

The Baker-Joslyn Company, manufacturers' agents, San Francisco, Los Angeles and Seattle, recently purchased the office and warehouse building and ground lease of the Northwest Trading Company at 2424-28 First Avenue, Seattle, as a permanent home for its Pacific Northwest business. The building is a one-story and full basement, 60 x 100 ft., constructed for office and warehouse purposes. It was built in 1919 at a cost of \$27,000. H. H. Manny is the Seattle manager of the concern.

The NePage-McKenny Company, Armour Building, Seattle, has been awarded a contract for the installation of a \$10,000 boulevard lighting system in the business district of Hoquiam, Wash.

The Washington Engineering Sales Company, until recently located in the L. C. Smith Building, Seattle, has moved to larger quarters in the Pioneer Building. The Washington Sales Company is local agent for the Pittsburgh-Des Moines Steel Co., the Northern Engine Works, the Blaw-Knox Company of Pittsburgh, and other eastern manufacturers.

The Electric Equipment Company of Walla Walla, Wash., which has been in the hands of V. E. McCain of the Western Electric Company, as receiver, has been purchased by A. W. Morey and A. H. Cash, who have been identified with the old company for some time.

The Bestove Appliance Company, Seattle, recently filed articles of incorporation with the announced purpose of engaging in the manufacture and sale of various electrical appliances, under patents issued to William Barker. James A. Dougan, New York Block, Seattle, is president of the company.

The W. H. Nichols Electric Company, of Los Angeles, has opened its new store at 4575 Santa Monica Boulevard. The rapid growth in the territory surrounding the present location will undoubtedly prove far superior from a sales standpoint, than the old store at 1045 Vermont street which has been vacated.

The Sanders Electric Appliance Company is proving the commercial value of a retail electric store when located on a city's principal thoroughfare. Its new store is in the heart of Pasadena's business district.

E. N. Greenleaf, district manager for the Salt Lake territory of the Allis-Chalmers Manufacturing Company, and Arthur H. Wyman of the Los Angeles office of the same company have exchanged locations. This move should add to the popularity of Allis-Chalmers products as each representative feels better suited to the respective territories to be covered.

The Pomona Wiring and Fixture Company is completing the electrical installation of the \$250,000 Y. M. C. A. Building. The lighting of the main lobby and auditorium is said to be the finest of its kind in the city.

J. A. Devo of The Syracuse Washing Machine Company has been detailed to supervise sales of the E-Z washer in the Intermountain territory with headquarters in Denver.

The contract for the power equipment of the new state office building in Denver has been awarded to The Hendrie and Bolthoff Manufacturing Company, the installation and wiring to be done by D. D. Sturgeon. The Albert Sechrist Company will install the lighting fixtures.



JOBBERS ON THE JOB

Introducing S. W. Peterson, general manager, and Bert E. Lucas, purchasing agent of the Stubbs Electric Company, Portland, one of the Northwest's live jobbing firms. Mr. Peterson, in emulating the busy bee, wears his hat in the office. Going over mountains of work is not his only accomplishment, for he has achieved fame for climbing Mt. Rainier, Pike's Peak and Mt. Hood. Mr. Lucas, it will be noted, wears the w.k. purchasing agent's "not today" smile.

Business Outlook in Western Market Centers

Reflecting the Trend of Community Thought on Conditions and Events Affecting Business and Industrial Activities Throughout the West

Compiled and edited for the Journal of Electricity and Western Industry by correspondents in all principal Western cities.

SAN FRANCISCO

It is expected that there will be increased activity in building operations, owing to a recent reduction in the price of materials. This is evidenced by the fact that during the month of October there were 901 sales of real estate recorded, of a total value of \$9,501,240, an increase of over \$3,000,000 above the figures for September and the highest total for any one month since March, 1920. The reduction in freight rates on certain articles is expected to stimulate business.

Money is easier, with ample supply of credit for legitimate commercial purposes. Rates for real estate loans are also easier.

Retail trade in most lines has been rather quiet, although a large holiday trade is anticipated. Trade in the automobile lines is quiet, sales of new machines being slow, although there is a fairly good sale of used cars. Furniture houses report a fairly active business. Tailoring and woolen houses report trade quiet. The situation in steel and iron has not improved to any extent. Hardware has shown improvement over previous months of this year, but is still behind 1920 in volume. The wholesale trade still reports business as quiet and not up to previous years.

Insufficient rainfall has retarded normal agricultural operations throughout California, but favored the harvesting of rice and the drying of the late picked prunes and apricots.

LOS ANGELES

Production of petroleum, which has been retarded during the past two months due to the oil-workers' strike in the San Joaquin Valley fields, increased during November.

Crop returns, which have been uniformly favorable throughout this section, are responsible for brisk business in farm implements.

Savings deposits are showing a steady increase, and retail trade is reported good.

The automobile trade reports considerable activity, and is featured by the erection of new sales-rooms and garages. Home building in Los Angeles and vicinity continues apace, with an estimated average monthly expenditure of \$20,000,000 for labor and materials.

SALT LAKE CITY

Flour mills in this vicinity are operating at approximately two-thirds of capacity, compared with one-half capacity a year ago. The flour market continues weak, with small domestic and no foreign demand.

Due to financial stringency on the

part of growers, marketing of livestock is reported heavy, with a corresponding decrease in purchases for restocking of depleted herds.

Distribution of cash advances to sugar beet growers has had a stimulating effect on credit conditions, but liberal extensions in most agricultural lines will be in order before marked improvement will be felt.

Some optimism is being expressed at the outlook of the copper market, which has resulted in slightly increased activity on the part of producing mines.

Holiday buying in Salt Lake is not expected to approach the volume of previous years but retail trade shows an improvement over previous months.

SPOKANE

Reduction in freight rate on ores to the Bunker Hill smelter at Kellogg, secured lately, is looked upon as a factor of no small importance in improving mining conditions throughout this territory. There are indications of a brisk competition arising in the near future among large metallurgical interests for ore, particularly lead ore or concentrates fairly free from zinc. All of this is to the advantage of the producer of silver-lead, which is the backbone of operating profits in mining in the Northwest.

DENVER

Recent improvement in business has not made the advance anticipated by major industrial lines in this territory. Payment of \$15,000,000 by the sugar companies to beet growers during the past month materially strengthened agricultural credit conditions, and the live stock industry benefited from the loans approved by the treasury department and war finance corporation.

A general coal strike in southern Colorado threatening to tie up the industry in the northern part of the state is embarrassing manufacturing interests and is almost nullifying production and fabrication in the Pueblo steel plants.

According to wholesale produce merchants, a bear market is making holiday goods scarce while in the dry goods lines inquiries are numerous but substantial purchases are weak. Country orders are in proportion to the city orders received by jobbers. There is marked conservatism in the purchase of electric materials and merchandise which indicates that dealers are keeping their stocks liquid.

Available capital has helped construction in all lines and especially smaller dwellings, in the face of stiffening prices on standard building materials. Of all activities in this section metal mining is in the most depressed condition. The employment trend is slightly

downward, due principally to the decline in seasonal work. Railroad shops remain steady with a limited demand for labor on track maintenance and similar work. Somewhat brighter prospects are expected to revive employment in meat packing lines. Public works are sluggish, with an encouraging outlook for renewed activity within the next sixty days.

SEATTLE

Although lumber exports and domestic shipments have shown a tendency to decline, the total output of 116 Northwest mills was recently reported to be but 19 per cent below normal.

While major construction activities are still retarded in Seattle, there has been no decline in residence and small-business-building construction.

Unemployment in Seattle is increasing. Various agencies and organizations in touch with the situation estimate the number of unemployed at from 7,000 to 12,000 men.

Business in general seems to be holding up very well, and the slump that was predicted to follow the gains made in September and October has failed to materialize. Business volume continues to be an aggregate of many small and diversified items, no large contracts having characterized the sales of recent weeks.

A snow storm of unusual severity, starting November 18 and continuing for several days, hampered all lines of business. Considerable property damage was reported throughout the Northwest.

PORTLAND

Shipments of lumber, wheat and apples continue to move in considerable volume from this port. Conditions in the lumber industry remain favorable, production being only about 13 per cent below normal.

Electrical jobbers, contractors and dealers report business as good. Retail electrical stores anticipate a volume of holiday business that will compare favorably with that of last year.

Jobbing business is reported as fair and retail and hotel trade have been stimulated by a recent livestock show. Building activity has reduced unemployment materially. A heavy sleet storm particularly in the Columbia River gorge, lasting from November 19 to 21, followed by a torrential rain-storm almost completely isolated the city of Portland from rail and wire communication. Damage amounting to several hundreds of thousands of dollars was done to overhead lines of light and power and telephone companies, and street car service was badly crippled.

Construction News and Industrial Developments

Suggesting to the Engineer, Contractor, Manufacturer, Dealer, Agent and
All Business Men Opportunities for New Business

THE PACIFIC NORTHWEST

SEATTLE, WASH.—Fred S. Hathaway, engineer, reports that \$468,000 will be spent on roads and bridges in Kitsap county during 1922.

EUGENE, ORE.—The erection of a large saw mill is expected as the result of the purchase of a tract of 43,000,000 ft. of timber by Battle Ground, Wash., interests.

BREMERTON, WASH.—An election is being held to vote on the question of authorizing \$250,000 in bonds to acquire a city lighting plant.

VANCOUVER, WASH.—The Kalama Port Commission is contemplating the building of ship ways for small craft on the waterfront, adjoining the new municipal dock, construction to start at an early date.

YAMHILL, ORE.—The city of Yamhill is contemplating bonding itself for the sum of \$10,000 to buy or build an electric light and power system. The matter will come up before the city council soon.

BELLINGHAM, WASH.—Plans of the Port Commission for harbor improvements will be voted on in December. It is estimated that the work will cost from \$375,000 to \$534,000, but no bonds will be issued.

SALEM, ORE.—In discussing the proposed railroad viaduct to be built near the fair grounds Herbert Nunn recently stated that this overcrossing is favored by his department, the cost of which will be \$100,000.

SALEM, ORE.—It is reported that the Weyerhaeuser Timber Co., with western offices at Tacoma, Wash., are surveying for a new sawmill to be built at Silverton to develop their timber holdings near that place.

HOQUIAM, WASH.—Actual work will start from Senator Poindexter that the matter of immediately rebuilding the radio station at Westport, destroyed by fire last April, will be taken up with the proper governmental department.

HOQUIAM, WASH.—Actual work will start soon on the installation of a \$10,000 boulevard lighting system in the business district of the city. NePage-McKenny Co. of Seattle have the contract.

BOARDMAN, ORE.—A franchise has been granted to W. H. Morgan for the installation of an electric lighting system for the city. It is reported that \$2500 worth of equipment has been ordered and that service will be available within 90 days.

LA GRANDE, ORE.—It is understood that some changes in the lighting of the business section of the city are contemplated in connection with the entering into of a new contract between the city and the Eastern Oregon Light & Power Co.

LEWISTON, IDA.—The commissioners of Nez Perce county have awarded the contracts for two steel bridges across the Clearwater above Arrow Junction to the Security Bridge Co. of Lewiston. Cost of bridge No. 1 is \$84,000 and bridge No. 2 is \$64,000.

LA PINE, ORE.—It is understood that a group of La Pine men will undertake the development of a power site at Pringle Falls on the Deschutes river for supplying light and power to the Walker Basin, Fremont and Ft. Rock Valleys communities.

WARRENTON, ORE.—It is reported that the Prouty Lumber & Box Company will erect an electrically driven sawmill and box factory on a 20-acre site recently purchased here. The mill

will have a capacity of 125,000 ft. of lumber per day and will employ 150 to 200 men.

CHEHALIS, ORE.—The Coy Valve Co., has been organized with a capitalization of \$1,000,000 to manufacture the Coy valve. George Graham, director of the company, requests that a site be provided and that a majority of the board of directors of the company be residents.

CHEHALIS, WASH.—Reconstruction of the Chehalis Box, Basket & Veneer Co. plant in North Chehalis, destroyed by fire several months ago, will be started at once, according to L. J. Sticklin, president of the company. The plant will have a capacity of 20,000 boxes in eight hours.

ABERDEEN, WASH.—Subscriptions amounting to \$7,160 have been secured toward a fund for building a bridge at Wishkak Street, under a stipulation that work will start within six months. The sum of \$100,000 will be required for the construction. It has been found impossible to bond the city for the full amount.

ALBANY, ORE.—Tentative plans for opening a Home Electrical in Albany, Ore., soon were formulated at the regular monthly meeting of the third district of the Oregon Electrical Contractors' Association held recently at the Albany Hotel. The next meeting of the third district will be held in Corvallis some time in November.

SALEM, ORE.—Representatives of the public service commissions of Washington, California, Oregon, Montana, Utah and Idaho met recently in Salem to formulate a uniform classification of accounts affecting electric utilities in the several states. There is at present no uniform system of handling these accounts, according to members of the Oregon commission.

SEATTLE, WASH.—It has been decided to petition the government for the use of 15 of the hulls in Lake Union on which to construct a pontoon bridge from Seward peninsula to Mercer island. The estimated cost is \$190,000. Frank Terrace is the chairman of the bridge executive committee, which consists of Samuel Hill, J. P. Hartman, Major Joseph Jacobs and R. P. Thompson.

SEATTLE, WASH.—The Mack International Motor Corporation has entered into a lease agreement with Clarence B. Bagley for the construction of a modern one-story concrete and brick structure on the northwest corner of Roy Street and 9th Avenue. The building will be used for general offices, salesrooms, assembly work, service room and warehouse purposes and was designed by Henry Bittman. Approximately \$100,000 will be invested.

McMINNVILLE, ORE.—Application for a permit to construct a reservoir on the headwaters of the Nestucca river for the storage of 6000 acre-ft. of water and to appropriate 35 sec.-ft. of water through a pipe line and tunnel 5 miles long for the development of 5807 hp. under a head of 1460 ft. has been filed with State Engineer Copper by the city. The estimated cost of the project is \$350,000. Power will be used for municipal purposes.

WASHINGTON, D. C.—A bill authorizing the appropriation of \$4,000,000 to complete the construction of the Alaskan railroad recently passed the house and was sent to the senate. The construction will include a 1,340-ft. bridge over the Tanana River and one 600-ft. long over the Menana River. A total of \$52,000,000 has been appropriated for this road which will extend from Seward to Fairbanks, a distance of 539 miles. Work is in progress on a final link of 61 miles.

THE INTERMOUNTAIN DISTRICT

DENVER, COLO.—A permit has been issued to I. B. Allen, formerly manager of the Shirley hotel, for the construction of what will be one of the largest garages in the city.

DENVER, COLO.—The new unit of the Jewish Consumptive Relief Society's sanitarium near Edgewater is nearing completion. Williams and Rose have the contract for electrical wiring and fixtures.

ROGGEN, COLO.—Plans for an electric light company have been completed and the company organized under the direction of C. E. Elkins. It is understood that construction of a small central station will be started immediately.

DENVER, COLO.—The Mountain States Telephone and Telegraph Company has completed plans for an addition to one of the main resident exchanges providing rest rooms, cafeteria, and storage space.

PUEBLO, COLO.—Bonds for flood protection improvements were authorized at the recent city election. The Pueblo Bridge Company has been awarded the contract for a new steel bridge over the Arkansas river at a cost in excess of \$100,000.

COLORADO SPRINGS, COLO.—Under the direction of the city electrician, Joseph Caldwell, an ornamental lighting system is being placed in one of the down-town parks. It is planned to extend this system on Tejon Street, the main artery of the business section.

BOISE, IDA.—The Murtaigh irrigation district plans to spend \$494,500 on power plant and pumping plant, according to application filed with the state department of reclamation, to use 1000 sec.-ft. of water from the Snake river.

DENVER, COLO.—The first unit of the Presbyterian hospital of Colorado is being built by the C. S. Lambie Co. D. D. Sturgeon, a prominent electrician, is a member of the building committee which has called for bids on the electrical work.

CRAIG, COLO.—The contract for the new \$40,000 state armory has been let to R. Danielson and Sons of Denver. It is the first armory to be built in northwestern Colorado under the reorganization act of the National Guard. J. J. Huddart of Denver is the architect.

BOISE, IDA.—Bids have been called for construction of a bridge over Payette River at Emmet to connect southern Idaho with Cascade and McCall. The bridge, which is estimated to cost approximately \$60,000, will consist of three spans, each 120 ft. long. The roadway will be 20 ft. wide with a 5-ft. sidewalk on one side. Two concrete piers will be necessary.

ARVADA, COLO.—The Community Club has secured the services of De Boer and Pesman, landscape architects of Denver, to revise the layout of the city, having in view the development of a residential section for Denver commuters. Paving contracts have already been let and inquiries are being made about a new street lighting system.

DENVER, COLO.—A number of the main down-town streets are being torn up by G. M. Gest for the Mountain States Telephone Company and the Western Union Telegraph Company. New trunk lines are being laid in some channels with the telegraph system and provision is being made for pneumatic tubes to connect all telegraph branches with the central office.

BOISE, IDA.—Application has been filed by the village of Lava Hot Springs to appropriate 150 sec. ft. of water from the Portneuf river for generation of light and power for municipal use. The estimated cost of the development is \$40,000.

DENVER, COLO.—The Tabor Grand Opera House, the oldest in the state, is being entirely overhauled by the Bishop-Cass Company for the largest moving picture theatre in the city, which, when completed, will seat 3600 people. It will be known as the "Colorado."

BONNERS FERRY, IDA.—It is reported that H. H. Hughes, manager of the city water and light system of this place, will purchase equipment for the new power plant to be located at the Moyle Springs power site. A generator, switchboard and transmission line will be required.

GREELEY, COLO.—The Home Gas and Electric Company is extending its transmission line from Pierce to Nunn, Colo., and if the weather permits, the distribution system in the latter town will be completed in time so that the town may enjoy the benefit of electric light Christmas eve.

DENVER, COLO.—The city engineer is making estimates on two new viaducts to cross the railroad section of the city, one of which is to replace the old viaduct leading from 16th Street to the North side and which carries all tramway cars. It is understood the city council favors the construction but certain railroads are opposed because of their having to bear part of the expense.

THE PACIFIC CENTRAL DISTRICT

OROVILLE, CAL.—The fire chief of this city has recommended the installation of a steam pumping plant as an auxiliary water system.

SACRAMENTO, CAL.—The California Highway Commission will receive bids until 2 p.m. Dec. 5 for three concrete bridges in Shasta county.

SAN FRANCISCO, CAL.—The Pacific Gas & Electric Company is planning the erection of a power house on Pit River, Shasta county, to cost \$100,000.

MODESTO, CAL.—The Pacific Construction Co. of San Francisco has a contract for the construction of 12,000 ft. of concrete drain pipe for the Modesto irrigation district.

OROVILLE, CAL.—The Great Western Power Co. is contemplating the building of a large hydroelectric plant near this city, which is estimated to cost approximately \$2,000,000.

SACRAMENTO, CAL.—Bids received for the construction of a distributing system for 3000 acres of land in Citrus Heights irrigation district have been taken under advisement.

SANTA ROSA, CAL.—Mallory Bros. have purchased a lot on Second Street, where they plan to erect a reinforced concrete business block for their machine shop and blacksmith works.

TUDOR, CAL.—Plans are being made by J. Crowley, engineer, Sacramento, Cal., for the construction of works in connection with the reclamation of 234 acres in Sutter county. The work will include a pumping plant, dredging and clearing.

RICHMOND, CAL.—S. B. Merry, of Ohio, treasurer of the Republic Steel Package Company, is in Richmond to superintend the work of erecting a factory opposite the plant of the Certainted Products Co. The company will manufacture steel containers.

REDDING, CAL.—The Ellamoore Co. of Marysville and Redding, contemplate the remodeling of the local plant of the Shasta Creamery & Ice Co., according to W. J. Moore, president of the company. The work, which will include the installation of new machinery, is estimated to cost \$100,000.

SAN FRANCISCO, CAL.—The Pacific Gas & Electric Company is receiving bids on substations to be built at Newark and Claremont (Alameda county), also at Vacaville, Solano county.

RICHMOND, CAL.—Surveys are being made on the 53-acre tract of the Proctor & Gamble Co. on the Richmond inner harbor, where the company plans to erect a plant at a cost of several millions.

RICHMOND, CAL.—The Golden West Motor Truck Co. contemplates the building of a plant here in the near future. The plant is now operating in Sacramento. S. Nicholson is head of the company.

OAKLAND, CAL.—A permit has been issued to the National Lead Co. for the erection of a three-story steel reinforced concrete building estimated cost \$49,000, to be built at 47th Ave. and E. 10th St.

SAN FRANCISCO, CAL.—The Golden Gate Ferry Co. has awarded the contract for its first ferry boat to the James Robertson shipyard, Alameda, according to a recent announcement. A second ferry boat will be built later.

SAN FRANCISCO, CAL.—Klopper Bros., Inc., Oakland, have recently incorporated with a capital stock of \$75,000; subscribers are Chas. Helen and Joseph Klopper. The company proposes to manufacture and deal in all kinds of sweepers, washing machines, etc.

MARYSVILLE, CAL.—R. E. Stephens of San Francisco recently made final negotiations with the hotel committee here for the erection at Fifth and E Streets of an eight-story hotel, containing 200 rooms, equipped with all modern conveniences. The structure will be fireproof and will cost approximately \$450,000.

OAKLAND, CAL.—The Tunison Motor Co. is planning the erection of an automobile factory in Oakland, where the Tunison car will be built, with the exception of the bearings and electrical units. A. W. Beam, president of the Hayward Chamber of Commerce, was recently elected president of the company. Geo. H. Reuben is general manager.

PORTERVILLE, CAL.—The new lime sulphur plant at Terra Bella has started operations, with a capacity of 5000 gallons a day. Another plant will be put in operation in the Orange Cove district in a short time and application for a third has been made by ranchers in the Success district. The latter projects are yet to come before the supervisors.

REDDING, CAL.—The Pacific Gas & Electric Co. is building a second tower line from Cottonwood to Pit River power plant No. 1, all of which will be on steel towers. The cable from Pit River to Round Mountain will be of aluminum which sheds snow better than copper. From Round Mountain to Cottonwood the three cables will be of copper wire. An order was recently placed for copper wire totaling \$1,500,000.

SAN FRANCISCO, CAL.—The California Transportation Co. has postponed plans for building two new river steamers, pending the report of army engineers on the improvement of the channels of the San Joaquin and Sacramento rivers. The type of steamer to be built will depend upon the result of proposed plans to widen the river channels and until this matter has been decided the company's present steamers will be repaired and kept in service.

SAN FRANCISCO, CAL.—Dr. Tatsumi Mochida and Jiuji G. Kasai, representatives of the Fuyigasu Spinning Co., of Tokyo, Japan, have been investigating developments in hydroelectric engineering and equipment in California. They are contemplating considerable enlargements and extensions in the way of hydroelectric power, according to Dr. Mochida. Their present plants are equipped with American machinery and the further extensions will call for much more equipment.

THE PACIFIC SOUTHWEST

SAN DIEGO, CAL.—The erection of a movie studio at Grossmont is planned by the Sawyer-Lubin Film Co.

POMONA, CAL.—The Pomona Valley Ice Co. is planning extensive alterations, to cost approximately \$250,000.

LOS ANGELES, CAL.—Architect Albert C. Martin is preparing plans for a three-story brick store and hotel building to be erected on East Seventh Street near San Pedro for B. Canepa.

LOS ANGELES, CAL.—Warren Bros., manufacturers of Warrenite, have made application to the Harbor Board for a site for a paving plant.

LOS ANGELES, CAL.—Building plans for a 10-story class A structure are being prepared by Dodd and Richards for the jewelry firm of Brock and Co. Four of the stories will be erected at once and the balance later.

LONG BEACH, CAL.—Permits for the 11-story apartment house have been allowed in the name of Wallace-Rush-Skidmore of Los Angeles. The building is for Frank E. Wright, owner; Chas. S. McKenzie is his architect.

LOS ANGELES, CAL.—Sylvester Weaver, president of the Weaver Roofing Company, whose plant was recently destroyed by fire, is contemplating the erection of a new factory on Slauson Ave. in Huntington Park district. Plans have not yet been completed.

LOS ANGELES, CAL.—The site for the proposed public library building has been definitely settled as Normal Hill. Bids for architectural service are in and the awards will be announced soon. The structure is expected to cost \$1,500,000 not including interior equipment.

LONG BEACH, CAL.—The M and M Manufacturing Company, dealing in machinery, has opened a plant in Wilmington. The firm is capitalized at \$200,000; D. G. McGregory is president and B. L. Morgan, manager. A new building is planned at a site on Mormon Island.

SAN DIEGO, CAL.—A 6-story building has been designed for the corner of 7th and Broadway to be occupied by Rabinowitz Bros. The plans contemplate spending \$100,000 at the present for the basement and first two floors, and adding the other four floors at some later date.

LOS ANGELES, CAL.—I. O. O. F. lodges contemplate the erection of a four-story class A building on the northwest corner of 12th and Flower Sts., to cost \$250,000. The ground floor will be used for store rooms and the upper three floors for hall, banquet and lodge rooms.

FRESNO, CAL.—The Union Hospital has about completed its plans for the \$65,000 hospital building to be erected at the intersection of Kearney Boulevard and A Street. Architects Glass and Butler have been retained to draw plans and it is understood they are now ready.

LONG BEACH, CAL.—A new automobile salesroom and garage will be erected at the corner of Elm Avenue and Anaheim Road, according to the announcement by Glenn E. Thomas of the Thomas Motor Car Company. The building will have three floors and will cost not less than \$150,000.

LOS ANGELES, CAL.—The Fairhaven Land and Improvement Company announce that a three-story building will be erected at the northwest corner of Main and Sixth Streets, to cost \$125,000. The building will be used for hotel purposes, the office, lobby and cafeteria to occupy the ground floor.

LONG BEACH, CAL.—A 7-story hotel will be erected by Omar H. Hubbard on Ocean Beach Boulevard near Cedar Avenue. Architects Parkinson and Parkinson in the Title Insurance Building, Los Angeles, say the structure will be of reinforced concrete and will cost \$400,000 exclusive of furnishings and equipment.



Difficulties of the Metric System

Scientists and manufacturers have long since expressed themselves on the subject of the possible adoption of the metric system, but the United League of Poets are still to be heard from. The matter has its difficulties. What rhymes with kilometer, for instance? And in the day when children lisp in centimeters and the units of an earlier day are no longer intelligible, what shall we do with those household quotations with which we instruct the young? Think what it will sound like when father bounces baby on his knee, the while he declaims:

"I had a little pony,
His name was Dapple Gray;
I loaned him to a lady
To ride 1.61 kilometers away."

Or possibly—

"Peter Piper picked 7.57 liters of pickled peppers."

We may quote Shylock's "454 kilograms of flesh" or even Tennyson, with picturesque effect:

"2.41 kilometers, 2.41 kilometers,
2.41 kilometers onward—
Into the Valley of Death
Rode the Six Hundred."

And consider the excellent rule when the family scales are out of order and the recipe for home brew must be carried out: "A pint's a pound the world round." Must we memorize "A liter is a kilogram, from Timbuctoo to Amsterdam"? We pause for a reply.

* * *

From the week's news we glean that the Electric Specialty Shop on Center Street, "J. Jones, proprietor, will be enlarged and painted."

* * *

WHY NOTT?

A duel was fought by Alexander Shott and John S. Nott. Nott was shot and Shott was not. In this case, it was better to be Shott than Nott. There was a rumor that Nott was not shot, which proves either that the shot Shott shot at Nott was not the shot, or that Nott was shot notwithstanding. It may appear that the shot Shott shot shot Nott or, as accidents to firearms are frequent, may it not be possible that the shot Shott shot shot Shott himself?

Or, as the conductor said, "There are two trains—at two to two and two two."



Boiler Room Bill discovers the only safe way to test a try cock

Nothing Like Being Accurate

The small boy was the first to answer the telephone. The person on the other end of the wire was a friend of his mother, and the following conversation ensued:

"Is this Mrs. Blank's residence?"

"No, ma'am, it is Mrs. Blank's little boy."

* * *

We read with interest in the San Francisco Chronicle that "There is nothing thrown away in the canning of pineapples. The only portion which is wasted is the thin, outer shell and that is used for fertilizer."

In other words, if ye was agoin' down the r-road and ye saw two cows a-lyin' down and wan av thim was shtandin' up—that wan is the Ir-rish bull.

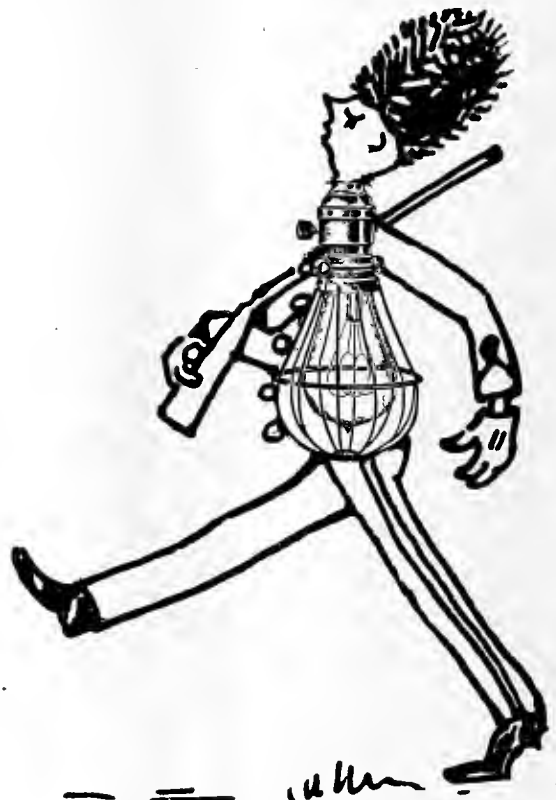
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For the Organ Recital, Perhaps

We quote from the last issue, to the effect that in the ventilation of hospitals, "ordinary hospital words" require 60 cubic feet of air per minute.

* * *

ELECTRICAL HYBRIDS



XVII — The Lamp Guard

The lamp guard bold protects the light
Who's locked in his embraces.
She's not his flame, yet it's all right—
Conditions alter cases.

A McGraw-Hill Publication

Journal of Electricity and Western Industry

25 Cents a Copy

December 15, 1921

San Francisco



GRANADA THEATRE

PRIDE OF THE WESTERN EMPIRE, *SELECTED*

WARD LEONARD DIMMERS

156 continuous duty plates control the entire house and stage lighting effects of this, the largest motion picture house in the West. A total lamp load of over 500,000 Watts.

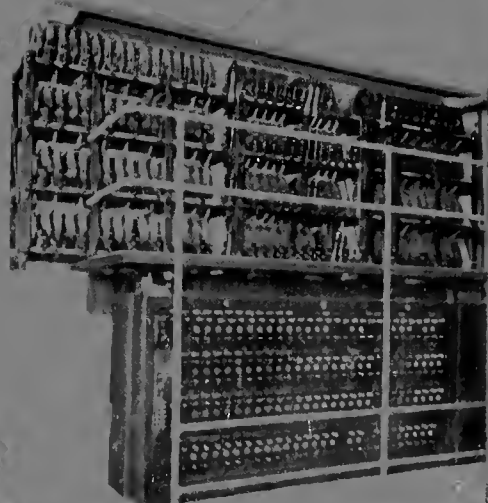
Vitrohm Dimmers were selected because of their known ability to perfectly and readily control the lamp load and

because of their substantial construction, and because Vitrohm, vitreous enamelled insulation, protects the resistance against electrical, mechanical or chemical disintegration, and because they are the lightest and smallest dimmers, and because the engineers would not permit the use of intermittent duty plates in the Granada.

All Vitrohm plates carry continuously their full rated load

Electric Materials Co. San Francisco - Los Angeles - Seattle

Agent for — Ward Leonard Electric Company



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Vernon
New York



“Macomb” low tension pin type insulators are wet process insulators of high quality---the last word in insulator manufacture.



Try them on your next job---we carry adequate stocks in our three Coast warehouses.

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SAN FRANCISCO

2424-28 First Avenue South
SEATTLE

Journal of Electricity and Western Industry

ROBERT SIBLEY, Editor

A McGraw-Hill Publication

Founded 1887

C. M. LINDSAY, Bus. Mgr.

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NUMBER 12

Journal of Electricity and Western Industry

A semi-monthly chronicle of western events, advocating the economy, efficiency and convenience of electric power for all industries of the West—manufacturing, agricultural, mining, merchandising, home building and home making. Interpreting the value of electrical development to the business and financial man, the industrial man, the power man, wholesaler and retailer, contractor and constructor, engineer and home owner.

Because of the abundance of water power in the West susceptible of economical development, a dependable, uninterrupted supply of cheaper electric power is assured for these industries. The basic industry of the West—hydro-electric power generation—for which Journal of Electricity and Western Industry is the spokesman, is therefore logically and inseparably linked to the growth and prosperity of all phases of our daily life and business.

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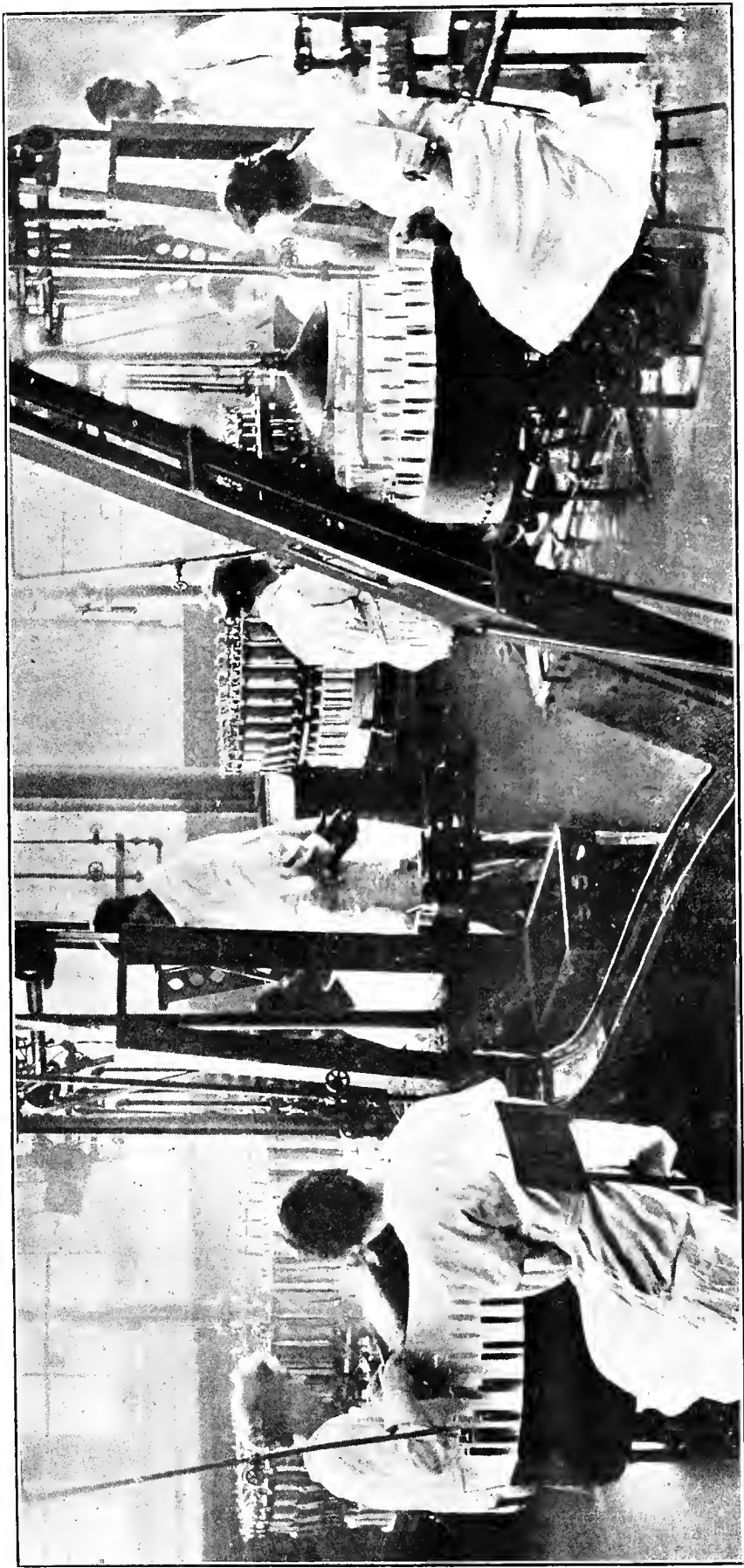
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The West Leads in Electrically Operated Material Handling Devices

THE work formerly done by twenty girls is performed by the one-half horsepower electric filling and sealing machine shown in the Chehalis factory of the Carnation Milk Company. This is but one of the many uses to which electricity has been adapted in this thoroughly modern plant, and is a striking example of the economies which may be effected by the intelligent utilization of the servant, electricity. The world is familiar with the utilization of electrical energy in the West for pumping purposes in the oil fields and irrigated agricultural districts, in dust control in cement

plants, for magnetic handling of scrap iron, in the operation of gigantic gold dredges, and other large scale operations. Many other ingenious industrial applications of electricity in technical processes, for material handling and for power purposes are perhaps not as well known, but are of equal importance. In every phase of western industry from the detailed processes of manufacture to the fundamental motive power of great industries, where economy, cleanliness, flexibility and improved operating conditions are desired, electricity is utilized.

Journal of Electricity and Western Industry

A McGraw-Hill Publication

ROBERT SIBLEY, EDITOR

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Vol. 47, No. 12

SAN FRANCISCO, DECEMBER 15, 1921

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Need for Closer Cooperation in the New Year

THE electrical industry throughout the West is today leading the nation in its spirit of helpful cooperation, organized in channels of practical service. The columns of the Journal of Electricity and Western Industry have too often set forth the splendid achievements of these various cooperative campaigns and service leagues to dwell in detail upon such matters here. Suffice it to say, that in such institutions as the California Electrical Cooperative Campaign, the Northwest Electric Service League, the Rocky Mountain Electrical Cooperative League, the Denver Electrical Cooperative League and the British Columbia Electric Service League, the West has found an important avenue of expression, alike for advancing helpful principles of merchandising within the industry and the

forwarding of the electrical idea among the public generally.

The year ahead has in store the meeting of a crisis in the electrical industry in more departments than one—and the need for the western organization which shall be in a strategic position, both to better conditions at home and to strengthen relationships abroad, is more urgent than ever before. The question of financial support for these cooperative leagues again comes forward with the new year. Manufacturer, jobber, contractor-dealer and central station alike concerned in seeing that, as in former years, these institutions stand firmly with the entire industry behind them. You cannot afford to leave any doubt of your whole-hearted support of moves of this nature.

What Is the Problem of the Colorado?

NO one can contemplate the tremendous architecture of the Colorado River's making without realizing something of the scope of the power latent in the muddy waters of that erratic stream. In its ultimate development, it represents power possibilities of some four million and a half horsepower, and the irrigation of some million acres of arid lands, as well as the control of seasonal floods which in past years have wrought destruction in the Imperial Valley and neighboring agricultural developments of the Southwest. The Colorado is at once the great problem and the future promise of an empire which includes seven major states of the West in addition to two states in northern Mexico.

The first prerequisite to any development of the river is the establishment of an all-comprehensive plan that will in its ultimate scope bring these waters to the maximum service of the people for irrigation, for flood control and for power development. With this general plan agreed upon, every reasonable endeavor should be made to get the first stages of this development under way at the earliest possible moment.

A generation soon passes. With the tremendous industrial and agricultural development going steadily on throughout the West, even through such periods of world-wide business depression as the one just ending, there will soon be a bitter need for both

power and water to an extent that only the Colorado can supply. If wrangling and red tape are allowed to stand in the way of its present development, the power and the water will not be available when the need arises and the coming generation of builders will suffer from our lack of foresight. We must provide for the future.

A Monthly Page of Cooperative Advertising

COOPERATIVE pages appearing weekly in the city newspapers of the West are of unquestioned benefit and the movement which was started in the early days of the California Electrical Cooperative Campaign has spread to communities up and down the state and elsewhere in the West under the encouragement of the respective cooperative leagues. Many of the smaller cities, however, do not offer sufficient returns to warrant the carrying of a weekly page. In such cases, advertising is apt to be scattered and in consequence in large measure ineffective. The example of the Grass Valley contractor-dealers who have joined together in a monthly cooperative electrical page suggests a way out of the difficulty. The advantages of the combined appeal are thus made possible without too great an expense or burden upon any one dealer. The idea is one to be recommended to other small communities of the West.

Exhausting the Lumber Supply in Thirty Years

AMERICA is the greatest lumber user of the world. This country produces more than half the lumber supply of the globe and uses 95 per cent of that amount within its own boundaries, according to Col. W. B. Greeley of the United States Forest Service.

Manufacturing centers are drawing at an enormous rate upon the timber supply—from two to four times as fast per capita as the country at large. The railroads require 125,000,000 wooden cross ties annually. The average American uses 125 pounds of paper a year, made largely from wood. A well-kept farm will require something like 2,000 board feet of lumber for its yearly needs. These are just one or two uses of the many which are fast helping to wipe out the standing timber supply of this country. One estimate of the life of the lumber industry of the Northwest has placed it at the outside at thirty years.

What is needed is not so much a decreased use of the timber supply—we cannot ask industry to stay its progress for the lack of wooden parts—it is rather the building up of a timber growing industry to parallel the timber-cutting industry.

We have more than 80,000,000 acres, an area greater than all the forests of France, Belgium, Holland, Germany, Switzerland, Spain and Portugal, which have been denuded to the point of absolute idleness so far as the production of any timber of commercial value is concerned. We have other enormous areas of cut-over land now growing but a fraction of the amount of timber which they might produce. And we are adding to these areas of idle or largely idle land from 10,000,000 to 15,000,000 acres every year, as destructive logging and still more destructive burning progress.

This situation cannot long continue without grave consequences. If we are to remain a nation of wood users, we must become a nation of wood growers. By some means or other we must see to it that forest lands not needed for agriculture are not allowed to lie idle, but are kept at work growing timber.

What Do You Mean— Back to Normalcy?

IN spite of advices to the effect that western industry is almost back to normal, advertising is still languishing, sales campaigns are somewhat less frequent, fewer firms than usual are finding it possible to keep salesmen in the field. Half the business world, apparently, is holding its breath and counting ten, awaiting the time when full "normalcy" shall again shed its glow upon the land. There is so much that is psychological in the whole matter of financial depression that it is questionable to what extent this is a necessary economic result of post war taxes and lessened demand and how much of it is merely atmosphere.

What are normal times? There is no question but that prices are lower and volume of sales less

than, say, during the Christmas of 1918. But we question very much whether they are lower than the midsummer season of ten years previous. A glance at the business reports will convince anyone that the "times" are always either growing better or worse, the cheerful "better days tomorrow" which is characteristic of periods of depression giving way gradually to a gentle pessimism as the sales and collections increase. At what point shall we set the pointer to read normal?

As a matter of fact, health in business, as in the life of the individual, is very much a personal matter. One line of business may have felt the lessening of purchasing power long before any other line in its vicinity was affected—and, due to its maladjustment to the price levels, have suffered in the midst of surrounding prosperity. On the other hand, a business fully alive and so situated as to be able to take advantage of shifting conditions, may have caught the trade which others let slip and actually have improved its situation during hard times.

It is possible to indicate, of course, whether the average amount of all commodities purchased is increasing or decreasing—but this means just what it says and should not be interpreted to mean much more than that. Every man must be the judge of whether his business is in a satisfactory condition or not—and if not, it is his problem to exert special effort to make it so. It is too easy to blame poor business methods on poor times. Let us worry a little less about normalcy and concern ourselves, not with comparisons of our business with pre-war and post-war incomes, but with the establishing of conditions which will be satisfactory in themselves, by business methods which are "good business" whatever the state of the barometer.

The Other Side of the Water and Power Bill

ON another page of this issue appears a letter to the editor from Louis Bartlett, mayor of Berkeley and president of the California League of Municipalities, which presents the arguments in favor of the proposed California water and power initiative act to come up for consideration at the election of 1922. It is the policy of the Journal of Electricity and Western Industry to open its "Letters to the Editor" column to all communications which comply with requirements of length, do not contain palpable misstatements and are not personal in tone, whether the editor agrees with the attitude taken by the author or not.

In the case of the power act in question, the attitude of this paper was expressed in the comments appended to the text of the proposed measure appearing in the issue of November 1st, and anyone interested in going into the matter in detail is referred to that analysis. In the opinion of this paper, there are many obvious objections to the act as proposed, chief of them the creation under its provisions of a board of five men politically appointed, in whose unsupervised control are placed the entire resources of the state of California. This board not

only may draw upon the credit of the state to the enormous sum of one-half a billion dollars, but it may command any of the power, water or other resources of the state to the extent which it deems necessary to carry out its work. This does not refer alone to resources as yet undeveloped, but may include any system or part of the system of any power or industrial company which seems desirable. More than this, if the calculated returns from the power sold are not sufficient to meet the interest or capital of the bonds to which the state has lent its credit, this board may draw to an unlimited extent upon the state treasury to make up the deficit, or even levy special taxes if necessary (see Section 9 of the Act). Of course, this eventuality is not anticipated, as Mr. Bartlett points out,—but who has not known municipal and state enterprises which were not successful and who is to guarantee that the members of this board will not be more concerned with their political reappointment and the privileges of their office than with the saving of the state funds?

This act is undoubtedly the most important that has ever come up before the voters of the state of California and every man interested in any way in the development of the state is urged to familiarize himself with its provisions in detail.

Transportation Problems and the Western Steel Industry

IN the continued march of western progress, steel holds an important position. The quantities consumed are increasing from month to month. Why then, should western manufacturers who deal in fabricated shapes or other iron and steel products, find their business on the decrease? The answer is that keen competition with the steel center of the eastern states, aided by inequalities in the freight rates on steel, is a combination which prevents western firms from securing their share of this business.

A recent case in point is found in the present situation in the Southwest. For years the use of riveted steel pipe for water and gas mains has proven successful and economical in the West and has afforded a market in which western firms have been comfortably able to compete. Under recent freight conditions, it was possible to import Belgian cast iron pipe direct from Europe laid down on the Pacific seaboard for less money than pig iron shipped from our eastern states. Just now the steel firms of the East are accused of maintaining the price of steel sheets and dropping on cast iron pipe. The western manufacturers of rolled steel pipe are thus caught between two conditions, neither of which they can have a hand in correcting.

Again, if structural steel can be shipped into the West at the same freight rates as bare shapes from the rolling mills, the fabricating shops of the coast states have slim chance of continuing in this business, especially during the construction lull in the East. Because the established steel centers are taking advantage of every condition in transportation or manufacture to maintain their volume of business, western industry is made to suffer. Not

until a western iron and steel industry is developed on such a scale as to make the West independent or nearly so, can the economic unbalance of eastern conditions be prevented from introducing such crippling influences into our western enterprises.

Fire Prevention and the Convenience Outlet

FIRE Prevention Day, followed by propaganda through moving pictures and the press has called especial attention to the dangers in unauthorized wiring and in the careless handling of electrical appliances. A further angle which should not be overlooked in the interest of the wider use of convenience outlets, is the danger resulting from an overburdening of lamp sockets. There is no need to frighten the public by alarmist advertising, but electrical men know from many years of experience that many factors of safety would be introduced into the household if the convenience outlet had the attention in home building to which it is rightfully entitled. The use of multiple attachments and the pull and strain upon wall and ceiling fixtures were never considered as part of their regular usage. It is time that manufacturers should cease advertising "lamp socket" appliances, as well as showing devices in illustrations attached to lighting fixtures. The convenience outlet campaign deserves the united support of the industry, as well as of those outside factors who are interested in the promotion of safety in the home.

Is Electrolysis the Explanation?

IT is sometimes very difficult to determine the cause of internal destruction, or eating away, in centrifugal and turbine pumps. The best engineering thought has frequently disagreed over the use of the words erosion, corrosion, and electrolysis; in the sense that these terms signify wearing action, chemical decomposition or electrolytic disassociation.

Recent examination of deteriorated material from deep-well turbine pumps in the San Francisco Bay district gives indication of electrolysis. These pumps are used in the supply of water for domestic purposes and have been showing a short life of but fourteen months on some of the wearing parts. Analytical chemists aver that the nature of the water itself precludes any possibility of the destructive action being due solely to the water. Other chemists after analysis of the metals—both new and worn samples—are equally positive that the metal is without fault which could account for the rapid deterioration.

The importance and economic value of a satisfactory solution is at once recognized when it is known that 34 turbine pumping installations are in use by one company in the Bay District, and similar difficulties have been experienced in other localities. A remedy, either as an external or perhaps internal preventative is no doubt assured, and western engineering will record still another achievement in one of its most important branches.

Western Comment on Current Events

Editorial Notes and Readers' Views on the Outstanding Aspects of Financing, Trade Promotion, Legislative and Associated Topics that have a Special Bearing on Western Business

Portland Votes for 1925 Exposition

Final Decision Depends Upon Action of Next Oregon Legislature on Three Million Dollar State Tax Measure

THE result of the recent Portland election on the \$2,000,000 city tax to finance the 1925 Portland Exposition was overwhelmingly in favor of carrying out the enterprise. With the \$1,000,000 which has been pledged from private subscription, this provides for the city's contribution. It remains only for the state legislature to pass the prescribed quota of \$3,000,000 which is to be raised by state taxes. There has been much opposition to the Exposition which some of the more conservative business men have felt was too much of a drain on the state under present conditions of less than normal prosperity, but the popular campaign in its favor has evidently carried the day and it is expected that the state legislature will probably also take favorable action in the spring.

Water Shipment of Fruit Increasing

Comparison of Rail and Steamer Shipment Indicate Growing Use of Water Route for Fresh Fruit

DECLARED shipments of fresh fruits in refrigerated or ventilated space through the Panama Canal during the eight months ended August 31, 1921, aggregated 7,132 tons, according to the Panama Canal Record. Of this quantity, 5,927 tons were shipped from the west coast of the United States, 1,193 tons from Australia and New Zealand, 10 tons from the west coast of South America, and 2 tons from the west coast of Central America.

All of the fruit from Australasia and 149 tons of that from the west coast of the United States, an aggregate of 1,342 tons, went to the United Kingdom. The 2 tons from the west coast of Central America were discharged at Cristobal, and the 10 tons from the west coast of South America went to the United States. The 5,927 tons from the west coast of the United States were distributed as follows: To the United Kingdom, 149 tons; to other countries of western Europe, 1,023 tons; and to the east coast of the United States, 4,745 tons.

In the fresh-fruit trade the unit is boxes rather than tons. Counting 30 boxes to the long ton, the shipments through the canal for the period aggregated 213,960 boxes, and those from the west coast of the United States 177,810 boxes.

To be compared with this are the carload figures

of California fruit shipments to the East as reported October 1st. These show an increase of 5,357 carloads over last year.

	1920 Carloads	1921 Carloads
Cherries	494	665
Apricots	312	284¾
Peaches	3,107½	3,333¾
Plums	2,533½	3,099¼
Pears	4,317½	4,071¼
Grapes	21,805½	26,551
Miscellaneous	306¾	228
Total.....	32,876½	38,233

Adding to the foregoing figures the carload shipments of citrus fruits for the year ending October 31st renders an imposing total, 48,075 carloads of oranges and 11,807 carloads of lemons having been shipped for the season, as compared with 35,638 carloads of oranges and 9,029 of lemons for the season of 1919-1920.

Pacific Coast to Have Forest Roads

\$15,000,000 Appropriated for Road Building in National Forests to be Spent Largely in the West

WITH the signing of the Federal Highway Act, an appropriation of \$15,000,000 for forest roads and trails is made available. The bill provides \$5,000,000 for immediate expenditure and makes an additional \$10,000,000 available on July 1, 1922. Over \$2,100,000 of the \$2,500,000 which is to be immediately spent upon roads of primary importance to the regions within and adjacent to the National Forests, is apportioned to the states located west of the Rockies, as follows:

State	Amount
Alabama.....	\$ 1,290
Alaska.....	258,273
Arizona.....	154,140
Arkansas.....	18,636
California.....	395,763
Colorado.....	180,539
Florida.....	6,648
Georgia.....	3,541
Idaho.....	278,944
Maine.....	731
Michigan.....	943
Minnesota.....	15,777
Montana.....	234,094
Nebraska.....	2,924
Nevada.....	55,352
New Hampshire.....	9,343
New Mexico.....	119,639
North Carolina.....	7,370
Oklahoma.....	1,495
Oregon.....	310,749
Porto Rico.....	385
South Carolina.....	416
South Dakota.....	20,511
Tennessee.....	5,760
Utah.....	98,529
Virginia.....	6,941
Washington.....	189,870
West Virginia.....	1,698
Wyoming.....	119,799

Total, \$2,500,000

A provisional apportionment of the \$7,000,000 additional for roads of primary importance to public travel will be made by the Secretary about January 1.

One new feature of the bill is that the co-operation of the states is not made a requisite, as in previous acts, in the expenditure of appropriations for National Forest roads. The law, however, permits the Secretary of Agriculture to receive co-operation, and Forest Service officials believe that undoubtedly considerable amounts will be offered, thereby augmenting forest road construction.

Hawaiian Labor Situation Improving

**Wages Reported Considerably Reduced on
Island Sugar Plantations with
Prospects of Early Relief**

REPORTS of conditions on Hawaiian sugar and pineapple plantations as received by Pacific Coast stockholders in the island sugar companies indicate that the labor situation which this summer was regarded as critical has greatly improved. For some months conditions approximated those of a strike, owing to the refusal of local labor, mostly Japanese, to work for wages within the range of possibilities. An appeal was made to Congress to permit the importation of Chinese labor under proper restrictions to work upon the plantations for a term of years. In the face of this possibility, it is said that wages have been considerably reduced and that the prospect of obtaining Chinese laborers is regarded as brighter. The importance of Hawaiian prosperity to Pacific Coast industry, which handles the refining and marketing of the island products, makes the satisfactory solution of the labor question one of particular interest to the West.

Municipal System Rejected by Voters

**Oregon Election Indicates Roseburg Voters
Satisfied with Present Private
Utility Electric Service**

SENTIMENT in at least one community in Oregon is against experimenting with a municipal light and power system if the results of the special election held in Roseburg, Oregon, on November 1 for the purpose of voting on the issuance of bonds to build a municipal power plant and distributing system, may be taken as a fair expression of the wish of the people of the city. Although the city still has the authority to issue \$500,000 in bonds and proceed with a new plant by virtue of authority granted in an election several years ago, it is very doubtful that it will make this move in the face of the adverse vote. It is also very doubtful whether \$500,000 would be sufficient to build a power plant and the necessary distribution system. It is reported that the private utility now supplying the city is rendering adequate and reliable service and is willing to make any necessary extensions and improvements to its property which may be necessary to properly take care of the needs of the community and there

seems to be no occasion for a municipal adventure in this field.

Northern California Rain Shortage

**Fifty Per Cent Shortage to Date Through
Northern California Indicates the
Possibility of Dry Season**

WEATHER Bureau reports indicate that precipitation to date for this season is about normal in southern California, but throughout the central and northern portions of the state it was less than one-half of normal. Light snow fell in the Sierras, but most of it melted before the close of the month.

The weather on the whole has been favorable for agriculture, especially in the citrus industry and for the drying of fruits, and harvests have been satisfactory both in quality and quantity. In general, however, early storms have taken a northerly course, bringing something of Mexican rainfall to the southern district, but carrying the precipitation of the northwest storms well above the California district. This is the type of weather characteristic of dry seasons and although, of course, no prediction is possible at this early date, the fact is regarded as significant in engineering circles.

Women Further Public Policy Work

**Educational Program Planned by Women's
Committee as Auxiliary to N. E. L. A.
Public Policy Campaign**

PLANS for the coming year were outlined at the recent meeting of the Women's Public Policy Committee of the National Electric Light Association. It was felt that the greatest need of the moment is the education of women within the electrical industry in the fundamental facts and policies of the industry as a whole and in consequence a series of lectures and publicity has been laid out which it will be endeavored to have presented in all sections of the country. The tentative program as now outlined has assigned the following topics for the first four months of the year:

January—Public Relations, Facts, Figures, Investments and the Business as a Whole.

February—The Home Electrified.

March—Electric Cooking—Demonstrations.

April—Relation of Employees to the Public—Courtesy and Goodwill.

It is hoped to follow this campaign up by articles and publicity in the technical press and in women's journals, as well as to review present good will advertising carried by national and local organizations with a view to incorporating in it the woman's point of view.

It is interesting to note in this connection, that several of the western power companies have already instituted lecture meetings for their women employees and that more than one of the local electrical luncheon organizations has followed the recent example of the San Francisco Electrical Development League in featuring Women's Day with a program designed to educate the women along electrical lines.

Letters to the Editor

Cooperation Among Engineers Asked as Aid in Improving Industrial Situation

To the Editor:

Sir: Having just read Mr. Leurey's article, "Progress of Industry Handicapped by Lack of Engineers," appearing in your issue of November 15th, I wish to express my enthusiastic approval of Mr. Leurey's timely statement and to give it all the support I can.

Mr. Leurey has put the matter so well and fully that I have nothing to add but rather wish to emphasize his remarks. The lack of electrical engineers in positions of responsibility and initiative with industrial organizations has become a real handicap to further progress. In part, this is due to the rapid growth in the application of electricity to industry, coupled with the inertia of existing customs; but it is also due to lack of cooperation among electrical engineers themselves. Obviously, owners and managers of industrial enterprises need educating; but those of us who represent selling organizations either for goods or for power are scarcely in a position to point this out to the said owners or managers; nor are those of us who are open to employment by industrial concerns in a better position, since we seem to be seeking personal advantage. Cooperation is needed.

I have been reading also, in the November issue of the Journal of the A. I. E. E., about the work of the Engineering Council and particularly about the investigation of Waste in Industry, as first suggested by Mr. Herbert Hoover. Well, Mr. Leurey has pointed out one kind of industrial waste that it should be rather easy to attack.

B. B. BECKETT,
Consulting Electrical Engineer.

San Francisco.

A Protest from Los Angeles Against Careless Fire Hazards in Industrial Districts

To the Editor:

Sir: Rome was almost destroyed by fire. The wealth and industry of Romans went up in smoke. How did the fire start? That is of no more consequence than the tune Nero fiddled while Rome burned. Nero's indifference was perhaps less reprehensible than the apathy of the average manufacturer when it comes to fire hazard.

Vernon is part of Los Angeles—so the Chamber of Commerce says in its manufacturing statistics—but the annexation process around the city of Los Angeles left Vernon still claiming city rights in her own name. Manufacturers searching for cheap factory sites have poured millions of dollars into industries for the West not thinking of the hazard from fire that exists in Vernon.

It is a peculiar situation when an industrial plant will not carry insurance sufficient to cover complete loss by fire, when it will not install modern fire-protection equipment, and when it will locate in a city that admits having inadequate fire protection.

Nearly one million dollars in fire losses have been added in the last few weeks to the totals for the state of California, by this little city of Vernon. The insurance premiums of this state must pay for the maintenance of a going insurance business and in the face of such conditions, Western Industry should wake up!

When a sprinkler system or other adequate fire protection equipment will pay 15 per cent or more a year on its investment by reductions in insurance premiums alone, what in the world can be the matter with the manufacturer who hesitates to provide his plant, his employees, and himself with the proper safeguards against disaster? That "he who hesitates is lost" is manifest in the history of three recent fires in Vernon, when the combined losses—in excess of the insurance carried—amounted to hundreds of thousands of dollars. And these three plants had turned deaf ears to fire protection experts for more than a year, knowing all the time that in case of fire there could be little help from their own city of Vernon, and the outside help—if sent—would be without means to check a big fire.

Manufacturers should fully awaken to such conditions as may exist in their plants and those adjoining them. A logical solution should be found quickly, for the elimination of such wanton waste in industry. No time should be lost in taking steps to permanently safeguard the lives, property, and business of manufacturing communities.

C. K. CHAPMAN.

Los Angeles.

League of Municipalities President Defends California Water and Power Act

To the Editor:

Sir: In reply to various questions regarding possibilities of increased taxation through the adoption of the so-called California Water and Power Act, I should like to state the position of those who are advocating the measure:

It is true that the "full faith and credit" of the state is behind the bond issues to finance this development work. This is done that money for development work may be borrowed at a low interest rate. But increased taxation is neither contemplated nor possible under the amendment. The act creates a Water and Power Board of five members. When any locality comes forward with a project, the board first determines the technical feasibility of the work and obtains proof that it will produce a definite amount of water or power. It then makes certain that there is a sufficient market for the water or power by obtaining contracts with cities or other political subdivisions that agree to take the water or power at rates (to be fixed by the commission) which will take care of interest, operation, depreciation and maintenance, and write off the principal indebtedness in fifty years. The Board then applies to the Finance Committee, also created by the act, for authority to issue and sell bonds, only to the extent required for this particular project. This committee consists of the Governor, the State Treasurer, the Chairman of the Board of Control, Controller, and the chairman of the California Water and Power Board. The bonds are then issued and sold.

It will be seen that the public venture is thus safeguarded in exactly the same way as the private enterprise, which must obtain its authority from the State Railroad Commission. There is no essential difference in principle, but a real difference in the safety of the plan, for the state acts only on the signed contracts of political subdivisions (none of whom have ever repudiated a contract), while the public utilities obtain their permits to issue bonds on a showing of the probability of a profitable market. Those who drafted the bill did not place the public projects under the authority of the Railroad Commission, as the function of that body is primarily rate fixing, and, under the plan of public development, rates are automatically fixed on a cost basis; so there was no reason for placing regulation in the hands of the commission.

The question has been asked as to what would happen if any of the state projects should fail to bring returns. It is pointed out that the act places the taxing power of the state behind all projects. For light on this problem, let us consider what happens when a privately owned utility finds it cannot get returns on its investment. It applies to the Railroad Commission for an increase in rates. This increase means increased taxation and nothing else for it is the consumer who ultimately pays. Eventually the same things would happen under California's Water and Power Act. The rates would be raised to bring a proper return. The bill specifically allows the board to develop a surplus sufficient to keep it a going concern, and with free access to 8,000,000 hp. of hydroelectric energy and 30,000,000 or 40,000,000 million acre-ft. of water, with the ability to borrow money at about two-thirds the interest rate that must be paid by private companies, there is no danger that the system will be unable to carry any project which may possibly prove unprofitable.

LOUIS BARTLETT,

Mayor, Berkeley, California.

President, League of California Municipalities.

Southern California Plants Use Pelton Wheel as Well as Those of Northwest

To the Editor:

Sir: I was much interested yesterday on receiving our copy of the Journal for November 15th, and reading the summary of present power development as given on page 386. Frankly though, I do not see why a journal devoted to western industries should be so hesitant about mentioning the name of the only company in the West that manufactures hydraulic machinery. Our company is credited with the Spring Gap plant and Cedar River plant, but no mention is made of Pelton in connection with Big Creek No. 2, Kern River No. 3, the Adams plant of the Southern Sierras Company, nor Nehalem plant of Seattle. Thirty-three per cent is a good batting average, but it is not a high standard of technical accuracy. It seems to me that a correction is in order.

A. T. PARSONS, Advertising Manager,

The Pelton Water Wheel Company.

San Francisco.

Attitude of the Woman Customer Regarding Merchandising of Appliances

To the Editor:

Sir: In the October first issue of the Journal of Electricity and Western Industry appeared a letter to the editor from Los Angeles, complaining of the practice of certain electrical dealers of carrying several lines of electric irons. Naturally, says the writer, the customer bought none of them. As a woman, not only interested in the electrical industry but also, as are all women, a purchaser of household equipment, I wish to refute what seems to be a general male conception of feminine psychology. No woman ever buys anything of importance without investigating the entire available market. If she is purchasing a suit she will try every store in town before she goes back and purchases the suit she liked in the first store she visited. She wants to know that she is getting the most that she can for her money. This is equally true of washing machines, vacuum cleaners or electric irons. I think ninety-nine out of every hundred women will state that they prefer to have a dealer carry an assortment of various lines of equipment so that they may make their selection without traveling all over town, rather than only one which he claims to be better than all others.

ONE OF THOSE WOMEN.

San Francisco.

Radio Bulletins

The Journal of Electricity and Western Industry is sending out each week by radio-telephone a report on the outstanding engineering and industrial developments in the eleven western states, together with a concise review of business conditions in the principal cities in this district. The following excerpts are representative items taken from messages sent out.

From all parts of the West reports and suggestions are coming in regarding the weekly industrial and engineering news and business report which is being sent out by the Journal of Electricity and Western Industry from the station of Colin B. Kennedy Co. at Los Altos. We want your opinion of this service. What have you to offer in the way of suggestions or comments? Send in your answer to the editor of the Journal of Electricity and Western Industry, San Francisco.

The Journal this week offers the following program of radio telephone service which emanates from San Francisco, the list having been prepared by the Pacific Radio Trade Association:

Every Afternoon Except Sunday.—3:30-4:30 p.m.: Atlantic Pacific Radio Supplies Co. Concert. 4:30-5:30 p.m.: Leo J. Meyberg. Press, Market and Concert.

Every Night Except Sunday.—7:00-7:10 p.m.: Atlantic Pacific Radio Supplies Co. Press—Sports and Foreign. 7:10-7:20 p.m.: Hotel Oakland. Press—General News. 7:20-7:30 p.m.: Leo J. Meyberg. Press—Financial and Weather.

Sunday.—10:00-11:00 a.m.: Leo J. Meyberg. Concert. 11:00-12:15 a.m.: Trinity Center. Sermon. 12:15-1:00 p.m.: Warner & Linden. Concert. 7:00-9:00 p.m.: Presidio. Concert and Instruction.

Monday.—7:30-8:30 p.m.: Colin B. Kennedy. Concert and Industrial News. 8:30-9:00 p.m.: Leo J. Meyberg. Concert.

Tuesday.—12:15-1:00 p.m.: Warner & Linden. Concert. 7:30-8:15 p.m.: Hotel Oakland. Concert. 8:15-9:00 p.m.: The Radio Shop, San Jose. Concert.

Wednesday.—7:30-8:15 p.m.: Atlantic Pacific Radio Supplies Co. Concert. 8:15-9:00 p.m.: Herrold Laboratory, San Jose. Concert.

Thursday.—7:30-8:30 p.m.: Leo J. Meyberg. Concert. 8:30-9:00 p.m.: Colin B. Kennedy. Concert.

Friday.—12:15-1:00 p.m.: Warner & Linden. Concert. 7:30-8:15 p.m.: The Radio Shop, San Jose. Concert. 8:15-9:00 p.m.: Hotel Oakland. Concert.

Saturday.—7:30-8:15 p.m.: Warner & Linden. Concert. 8:15-9:00 p.m.: Atlantic Pacific Radio Supplies Co. Concert.

N. B.—Atlantic Pacific Radio Supplies Co. schedule will start in on about December 7. Trinity Center schedule will probably start about January 1, 1922.

The Doherty interests of New York, owners of a system of electric plants throughout the middle west, have filed an application to develop 65,000 horsepower on the Colorado River.

Richmond, Cal., will spend a quarter of a million dollars during the next six months for harbor improvements.

Merced, Cal., has voted favorably on a \$12,000,000 bond issue for the development of one of the largest irrigation systems in the West.

Word comes from China that the Orientals are marveling at the wireless telephone, which is being demonstrated there by Professor C. H. Robertson of the Western Electric Company. In Shanghai, fifteen thousand Chinamen heard the first lecture and so great was the effect upon them that over 300,000 curious Celestials came to see the man talking with a mysterious voice in space.

Builders of the West

WHEN a frail eastern boy of 18 walked up to a rancher's cabin in the San Fernando valley of California, back in 1882, and insisted on sleeping in a straw-pile, the rancher, whose name was Hudson, was doubtful if he would live over night. Harry Chandler, now president and general manager of the Los Angeles Times Publishing Company, who was the tall thin boy mentioned above, was born in Landaff, New Hampshire, and was forced to come to California for his health. Coming to California was a great thing for him. He meant to get well, and succeeded to such an extent that a few years later he defended himself in fifty fist fights in one day. He had won those battles much as he has since, by being sure to be on the right side of the controversy and never giving up.

In 1885, after spending three years in farming and truck gardening, necessity drove him to ask for a job on the Los Angeles Times and neither dynamite nor infernal machines could blow him out of it, as later events proved.

During the 36 years with this newspaper which he now heads, the twinkling lights of a town of 16,000 have grown into a city 40 times its size, while he looked on night after night from his midnight job on a morning paper. Many trails in the progress of western development have led past the door of Mr. Chandler's office and it is said that he always drops his work and joins the movement. Perhaps this is because his midnight watches of a morning paper have taught him to beat double time in his office while the rest of the Southwest sleeps.

His friends say you need never worry about where "Harry" stands on a question. He is either for or against it, if interested at all. With a far-seeing vision wisely directed by the records of his own observation and experience, he is working tirelessly for the development of the "back country," as he calls it. At the present time he is active in agricultural development in the lower Imperial valley, where the California-Mexico Land and Cattle Company is well known for its extensive irrigation and drainage system. The twenty years that he and his associates have spent in this ranch project have paid them no dividends, but the experience gained has been of immense value to the entire lower valley of the Colorado River.



HARRY CHANDLER

President and general manager of the Los Angeles Times Publishing Company, who is one of the great leaders in the agricultural and industrial development of the Southwest, and one of the men responsible for the rapid growth of Los Angeles.

In connection with the development of water power and further irrigation projects on the Colorado River, he thinks that Los Angeles should have the power brought to her or sold to her at some point in the state, without the necessity of the city going into a business enterprise outside of California.

Mr. Chandler has been persistent in the organization, financing, and directing of enterprises of all descriptions, leaving them when they have passed the infancy stage, only to welcome—later on—an opportunity to help launch still another western industry. Much of the credit for the vision which has made possible the rapid growth of Los Angeles from a small village to one of the metropolitan centers of the Pacific Coast and of the United States, goes to Harry Chandler for his direction of the policy of the Los Angeles Times, the paper he owns. Through its columns he has "told the world" of the possibilities of the city.

Based on the scope of his studies and the judgment of so many years of experience, some of his prophecies are interesting. He believes that suitable coking coal from the San Juan Valley should give California pig iron at Pittsburg prices. Fuel coal will be shipped from Kamchatka across the Pacific and laid down in this country at \$4.00 per ton. Private development of the country's resources will, if continued, be more desirable than the shifting responsibilities of municipal ownership of business enterprises.

As a lover of the great outdoors and an advocate of the policy of making our national parks year-round recreation grounds for everyone, Mr. Chandler has been instrumental in the development of the mountain outing places for which the state is famous. In his position as director of the Yosemite National Park Company, he has aided in the growth of that national park from a state of comparative oblivion to one of the nation's most popular scenic recreation centers.

To Harry Chandler, because he has the courage of his convictions, for his keen insight into the future, and for his well deserved reputation as a "fiend for work," in the upbuilding of the West, this issue of the Journal of Electricity and Western Industry is affectionately dedicated.

Refrigeration and Ice Making as a Central Station Load

The Storage of Perishable Fruit and Vegetable Crops, and Refrigeration in Homes, Hotels and Apartments and the Installation of Ice Making Machinery Offer Profitable Opportunities

By CARL K. CHAPIN

NO industry of the present day can so well defend a claim to efficiency in the production and distribution of a necessity as can the electrical industry. Due to constructive imagination and inventive genius, no apparatus in the hydro-electric systems of the West has less than 80 per cent efficiency, and much of it actually exceeds 90 per cent. It is true, however, that yearly load factors can be greatly improved if the industry applies the same effort to this task that has thus far characterized its advancement along other lines. Further development of the use of electrical energy in refrigeration and in the ice making industry offers central stations an ideal opportunity to increase yearly load factors and thereby decrease the idle investment in plants and distribution systems.

Natural Ice Not Readily Obtained

In a country where natural ice forms only in mountain ranges and inaccessible rivers, and where the richest yields of perishable food products to be found in the world are marketed every month of the year, the possibilities of electrical refrigeration and ice making as a central station load are tremendous.

Recent activity in the installation of refrigerating equipment indicates that too little attention is being paid to the diversified applications which are offered by western conditions. It is not the occasional installation of electric power in a commercial ice plant that makes industry as a whole profit by this application of electrical energy. It is the use of the principle of refrigeration in every conceivable manner that may be helpful to living conditions or industry in general, to the end that big units in manufacturing districts, and small units in residential sections, will all combine to increase the load factor of distribution systems as well as the generating systems of the power companies.

Electrically Driven Machinery Predominates

That manufacturers of ice are willing converts to electrically driven machines is evidenced by the results of four years' growth in one of the largest population centers of the West. In a circle 50 miles in diameter with the city as the center, 500,000 tons of ice are manufactured per year, or 1,000 tons per square mile. Of this total, 70 per cent is now made with electric power, whereas four years ago no ice making machinery depended upon central station service.

Twenty years ago, to quote the authority of the foremost technical journal on refrigeration at that time, only 200 tons of refrigeration machinery was in use in the three states, California, Arizona and New Mexico. In 1914 and 1915 approximately 3,000 tons were sold each year in the same three states,

while 10,000 tons is said to have been added in 1920, of which one concern alone installed 6,000 tons in electrically driven equipment. It is worth noting that every ton of electrically driven refrigeration sold in the West has a potential value as a power consuming medium of 5,000 kw-hr. to 7,500 kw-hr. per year and for ice making this figure is doubled.

This rapid increase is but an acknowledgment of the possibilities for the use of electricity in supplying the necessary power for commercial refrigeration and ice making purposes.

Application to Other Industries

In the chemical arts many hazardous elements can be reduced or eliminated if advantage is taken of refrigeration which can be used to advantage in slowing up chemical reactions or controlling the temperatures which tend to rise abnormally during certain processing, thereby reducing the explosion



From studies of delivery expense conducted recently it was found that in apartments where the driver must ascertain the quantity for each customer and make ticket for cash settlement at the time, the delivery expense alone for ice amounted to \$5.00 and \$6.00 per ton. The apartment shown serves each tenant with refrigeration piped from a plant located in the basement at a saving to them and without the muss and wear of ice delivery through the building.

hazard. Many manufacturing plants use circulating water for cooling purposes, which could be more advantageously performed by means of refrigeration. In a recent instance a paper impregnating plant with an investment of \$150,000 was definitely turned from commercial failure to success by the substitution of a refrigerated cooling system in place of city water. The investment of a few thousand dollars in an 8-ton refrigeration unit thus contributed to industry in no uncertain manner.

In the technical departments of the great motion picture establishments we find air-conditioning chambers provided with artificial refrigeration, by which means it becomes possible to control temperatures and humidity, thus insuring speed and uniformity in the preparation of films.

By a scientific process of pre-cooling, western fruits are now shipped in iced refrigerator cars to destination points in the East without re-icing in

transit, even though 25 days should elapse between start and finish of the journey. Few packing plants are at present equipped to do this properly but pioneering and experimentation have removed all of the elements of chance. From the apple and pear country of the Northwest to the cantaloupe valleys of the Lower Colorado River many fruit packing plants are still without means of preserving their crops in the event market conditions or transporta-

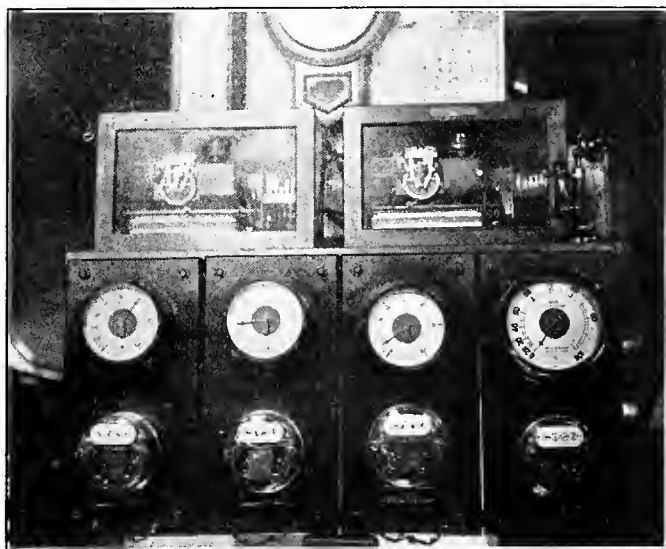
plant has two complete units, synchronous motor-driven, and assists in power line voltage regulation by carrying sufficient excitation to have leading power-factor when desired.

Much of the Load Is Off Peak

By using non-automatic systems in connection with brine storage or freezing tanks it is possible to provide apartment houses, hotels, office buildings and factories with refrigeration and so time the operation that all normal use will occur on the off-peak hours of the system, the circulating pump being the only constant power necessary. The field of refrigeration in office buildings, apartment houses and the like, is unlimited and has many arguments of economy, cleanliness and convenience.

This is attractive business from the electrical manufacturer's standpoint due to the high standards of installation methods which must be maintained to insure dependable service, and last but perhaps the most interested of all, are the power companies who should fully realize the possibilities of adding 150,000,000 kw-hr. per year to the power systems of the West as was done during 1920. With each year opening the way to increased opportunities for the application of refrigeration engineering, who can doubt that it offers a more dependable market, with greater inherent advantages for the use of central station power than any other field so far developed?

It has often been pointed out that just as the snow and ice stored by nature in the mountains of the



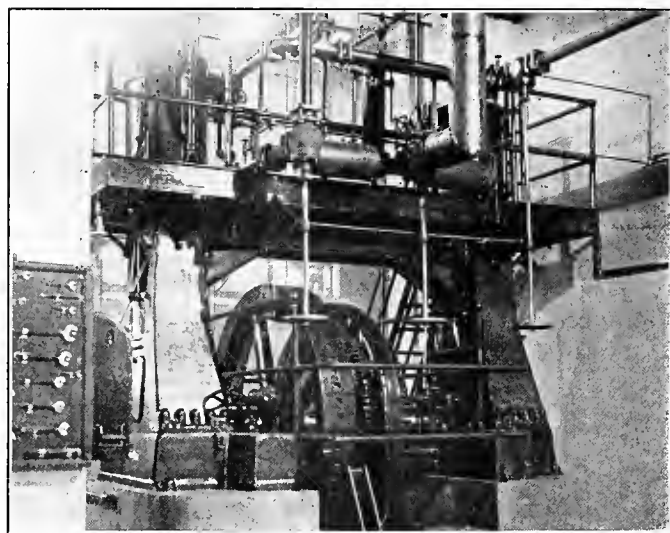
Freight terminals are now being equipped with refrigerated space subject to lease by shippers and the charges are based upon the actual heat units extracted from the stored product. This picture shows the equipment of the Terminal Refrigeration Company in Los Angeles, built to order for this installation. Flow meters give recorded quantities of refrigerant which pass through the given rooms, and recording pyrometers furnish a curve sheet from which mean effective inlet and outlet temperatures are obtained; from this data the actual B.t.u. absorption is calculated. The charges for refrigeration average \$1.25 per ton.

tion do not permit prompt distribution. A recently proposed development in this direction is a move on the part of a California citrus growers' association to build at tide water a cold storage plant with a capacity of 200 carloads. The fruit will be collected from the various packing houses within a radius of 100 miles by motor trucks. With a fleet of steamships provided with refrigerated storage holds this association will handle its own shipments to the Atlantic Seaboard and European ports.

As the experience of western cooperative associations becomes more widely known and better understood it is evident that the best interests of grower and consumer will depend upon further expansion of scientific storing, packing and shipping.

Improves Diversity Factor of Feeders

Applications of refrigeration are not confined to metropolitan districts and may be well applied to rural conditions and smaller towns where in the case of refrigeration storage, the load automatically falls into an off-peak class as the winter seasons approach. This is also the case in ice plants where more than one unit is installed, only a portion of the equipment being necessary in the colder weather. A typical case is offered in a typical city of 35,000 population. The yearly load factor is 71 per cent of full average demand against 8,760 hours possible use; the maximum summer month being 92 per cent load factor and 54 per cent for the winter. This



A recent development of electric-driven compressor requires a minimum of floor space and when equipped with synchronous motor as shown it is the last word in economy and reliability. This 65-ton refrigeration unit with a 115-horsepower slow speed motor requires only one-third of the floor space of a 65-ton belted unit in the same plant.

West furnishes a means by which the generators of hydroelectric energy may be kept running throughout the summer months, so do blocks of electrically made ice or warehouses of refrigerated produce represent stored kilowatt-hours, especially if they are produced during the "off-peak" hours. There is no section of the country which presents such a promising opportunity as do the states of the West where the seasons are such that refrigeration is necessary for many months of the year.

Electric Furnace Best for Conditions on the Pacific Coast

In Iron and Steel Manufacture the Efficiency of the Electric Furnace and High Quality of Product Offset the Absence of Coking Coal Necessary for Blast Furnace Methods

By L. J. BARTON
Consulting Metallurgical Engineer

WHEN nature so richly endowed the states west of the Rocky Mountains and on the Pacific Coast with their wonderful agricultural and mineral resources, year-round climate and wonder harbors, she apparently neglected to supply one element necessary for the development of a self-contained industrial empire. This element is coking coal suitable for use in the reduction of iron ores. Luckily, however, she provided a substitute in the form of abundant hydroelectric power, the adaptation of which in the form of the electric furnace will permit this region to be the foremost producer of high grade steel and steel alloys.

We have on the Pacific Coast great mountains of the finest ore, unlimited deposits of limerock, but no available quantities of coal. To make one ton of iron in a blast furnace one ton of good coke is required. Good coke presupposes good coking coal in unlimited quantities. The secret of cheap steel is in tonnage production and the ability to use "hot metal," that is, being able to tap the iron direct from the blast furnace, pour it into the open hearth or converter, refine and pour into ingots. This is known as the "pig and ore" process. Having no blast furnaces on the coast we are forced to use what is known as the "scrap and coke" process for open hearth steel. In this process old scrap is used in conjunction with coke, which gives the necessary carbon. This is much slower than the "pig and ore" process and consequently means higher cost.

Other Factors of Influence

Aside from the absence of sufficient quantities of suitable coal, there are other factors which preclude the operation of blast furnaces on the Pacific Coast. The first of these is the absence of markets to absorb the tonnage produced since a blast furnace, to be economical, must turn out 500 to 600 tons of iron a day, and must be in continuous operation so that the furnace may be kept hot. In addition, most western, and particularly California ore, while exceedingly high grade, is very refractory and furnishes technical difficulties when used in the blast furnace. For these reasons the blast furnace is eliminated as a practical and economical method of iron and steel production in the West. High freight rates and distance from the larger industrial centers prevent competition with eastern steel on any but a quality basis, such as the production of iron, steel and malleable castings, high grade forging ingots, alloy steels and manganese steel castings. The peculiar adaptability of the electric furnace to the production of high grade steel seems to offer a solution which will make the Pacific Coast a heavy producer of this commodity. This seems logical when

we consider the availability of large supplies of hydroelectric energy from the new power stations under construction and the great program of development in contemplation. This will mean cheaper power, and cheaper power will mean that this section of the country will progress as never before in the electric furnace iron and steel industry.

There is another factor which may force the electric furnace into more general use, namely, the question of sulphur, which is fast becoming a problem. All iron after going through a cupola or blast furnace to make an iron casting contains a higher percentage of sulphur than the raw charge, caused both by the loss of iron by oxidation and from an accumulation of sulphur from the coke. This is one of the most pressing problems of the blast furnace industry.

A comparison of the two methods for making iron castings demonstrates the superiority of the electric furnace over the cupola method. In the cupola process alternate layers of coke and metal are placed in the furnace. An air blast is turned on which blows through the coke, the heat of combustion of this coke melting the iron. As the iron melts it trickles down over the hot coke, through this blast of air, onto the hearth. When sufficient molten iron has collected in this manner the cupola is "tapped" into a ladle and the iron is poured into moulds. During this process the iron collects sulphur, is oxidized by the air, and has become contaminated by impurities in the ash of the coke and possibly particles of mud and brick from the cupola lining. There is no possibility of an accurate analysis and it is impossible to obtain high temperatures of the iron with any uniformity. When thin section castings are desired high phosphorous content is used which further weakens the final product.

Superiority of Electric Furnace

In the electric furnace, the charge is placed on a clean hearth of well burned material, is melted directly by an arc without contact from any oxidizing blast of air. There is no pick-up in sulphur from coke and the metal is thus comparatively free from impurities. A lime slag can be put on which will cut the sulphur from .12 per cent down to even as low as .005 per cent in less than one hour. The metal is also thoroughly freed from any possible gaseous matter. A most important consideration is that the bath be held any length of time without change, making it possible to obtain any desired analysis with unfailing regularity. To obtain high temperatures of the iron it is only necessary to hold it in the furnace longer without the necessity of adding high phosphorous irons. This means that

the electric furnace product is uniform and far superior to the best cupola iron. A uniform product is impossible in the blast furnace. One heat may be what is desired while the next may be only suitable for such low class products as brake shoes or window weights.

The cupola advocate will of course bring up the question of cost. Let us see. In the cupola it is necessary to use about 40 per cent of pig iron. Coming from the East or from foreign countries, this means a high freight cost, making a costly product. The electric furnace uses such cheap grade materials as borings, turnings, forge clippings and flashings. Accurate operating costs have been gathered which show that the electric furnace is cheaper than the cupola. The main objection to the electric furnace is its first cost, which is higher than that of the cupola. However, it pays for itself by producing a superior product and as specifications become higher the electric furnace product will perhaps become mandatory. What is needed on the Pacific Coast today is a pioneer who will install an electric iron foundry, employ a skilled metallurgist and enter into competition with the established iron foundries. The result would be to immediately put out of business any competitor using the cupola.

Can Produce Better Steel

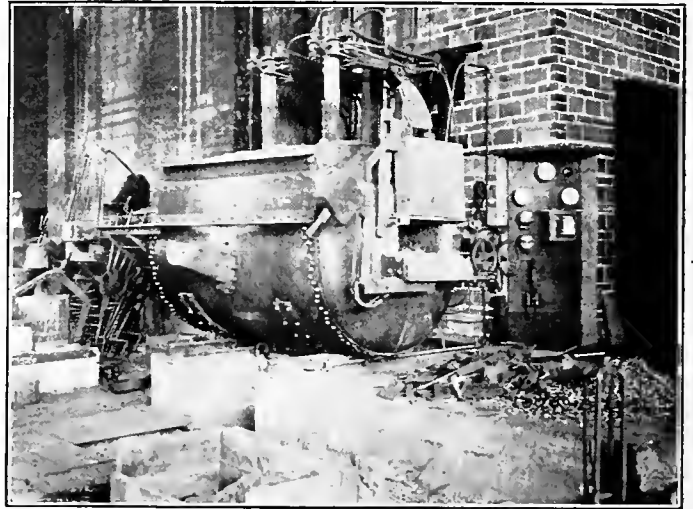
Similar economies are effected in the production of steel. The open hearth cannot supply the same quality as an electric furnace and while electric steel is slightly higher in price than the open hearth, the quality more than compensates for the increased cost. The rigid specifications of the automotive and tractor industries and of the ordnance department of the army are such that only alloy steel made by the electric furnace can meet them. The crucible, of course, is eliminated by question of cost and size of work. On the Pacific Coast there are several automobile plants engaged in assembling only, which should be making their own steel. There is no shop on the coast making a high grade forging ingot. These points will be adjusted and when the time comes the electric furnace will come into its own.

There are instances where electric furnaces have been erected by organizations which either had insufficient finances or which did not understand the mechanical processes of steel manufacture. There are today an increasing number in successful operation.

Adaptability an Asset

We have discussed the superiority of the electric furnace over the older processes on costs and quality. Let us look to another important phase, adaptability. In the jobbing trade it is a great asset to be able to handle any class of work which comes in. The open hearth furnace pours from 25 to 50 tons at a heat. The metal cannot be made hot enough to handle small castings successfully and a shop having an open hearth can only cater to large work, where the margin of profit is small. Orders for small tonnages of special metals, such as alloy ingots and manganese steel castings, where the profit is large cannot be handled at all. In the same manner iron

foundries equipped with the cupola cannot handle special work, where a low phosphorous and sulphur is specified, such as heavy duty valves, cylinders,



Greene electric furnace in the plant of the Vulcan Manufacturing Company, Seattle, Wash. The Greene electric arc furnace is manufactured in Seattle and there are many of this type of furnace in operation in western states.

piston rings. In a shop equipped with an electric furnace the following can be economically made:

Castings.—Iron, white, chilled or grey, any analysis desired; malleable cast iron; steel, any grade of carbon or alloy analysis.

Forging Ingots or Heat Treated Castings.—Any class of alloy or carbon steels.

Tools.—Any class of carbon or high speed, either cast or in an ingot to be forged.

Special Products.—Electrical resistance alloys, stainless steels and magnet and transformer steels.

Smelting.—Pig iron and all classes of ferro-alloys.

Acid Resistant Castings.—Corrosiron, tantiron, etc.

Floor Space Saved

Another point in favor of the electric furnace is the ability to handle a certain tonnage on a minimum floor space, with the lowest possible amount of auxiliary equipment, such as heavy cranes, or charging machines, all of which help to lower the first cost and overhead.

One of the greatest troubles in the iron foundry of today is lost castings, usually caused by the metal being too dull to pour, causing mis-runs and cold shuts. The loss on one poor casting absorbs the profit on several good ones. This is entirely overcome by the electric furnace. A point often overlooked is that it is not entirely the furnace which means success, it is the man in charge of melting operations. In the hands of an experienced man the electric furnace is a piece of equipment which cannot be beaten for cheap, accurate and regular results. In the hands of a mediocre operator it is a useless expense.

At the present time on the Pacific Coast there are nearly 40 electric furnaces, each shop handling only one or two classes of possible work. Consequently the shop is only running on part time and expenses are far too high. If a shop were to be started, with ample backing, and the determination of the organizers to handle all the higher classes of work possible to obtain, it would produce astounding results.

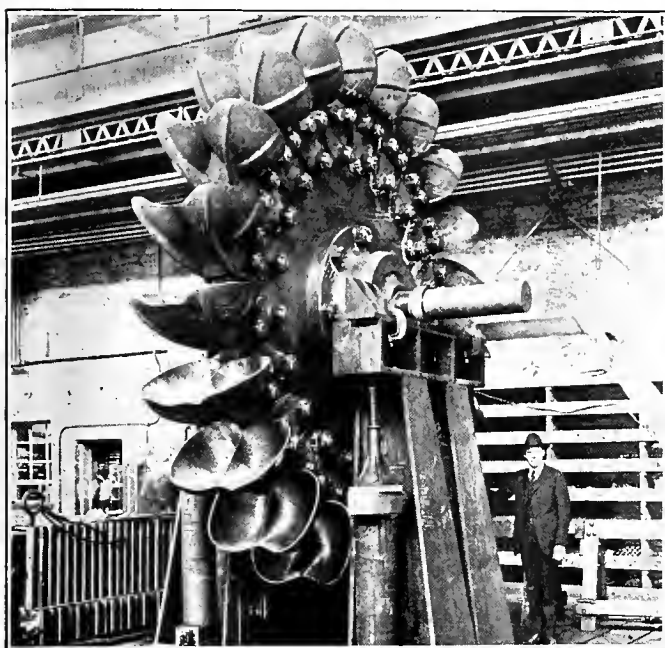
Caribou Power Plant Has World's Largest Impulse Wheel

In the Selection of a Prime Mover Reliability was the Dominant Feature Influencing the Choice of an Impulse Wheel for Conditions to which a Reaction Turbine Could Be Applied

By W. M. WHITE
Engineer, Allis-Chalmers Manufacturing Co.

THE machinery installed in the Caribou plant of the Great Western Power Company is of particular interest by reason of the fact that the units are the largest impulse wheel driven machines in the world, having a normal capacity of 30,000 hp. each under 1008-ft. head, at 171 r.p.m. They possess possibly even greater interest by reason of the considerations leading to the selection of the impulse type for conditions to which a reaction turbine could be applied. This latter feature is of interest in view

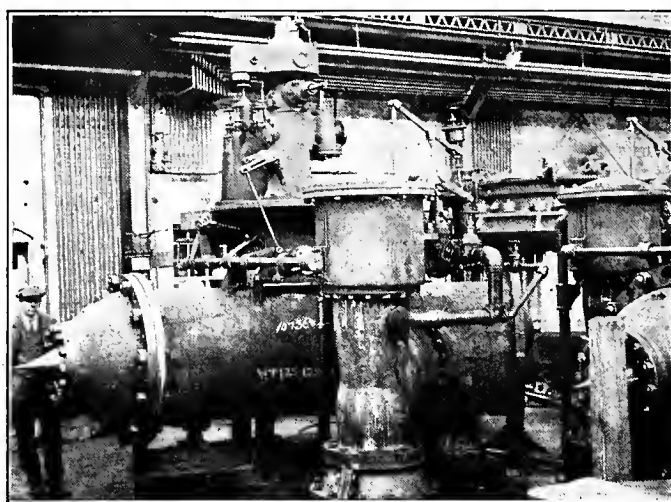
engineering world the first assurance that such construction could be successfully installed and operated with commercial economy. Since that time heads up to 600 ft. have regularly been developed using the reaction type of wheel unless the capacity of the units was very small. More recently, higher head units have been installed, notably the 680-ft. head unit of 30,000 hp. in the Big Creek plant No. 8 of the Southern California Edison Company and the 22,500-hp. units under 800-ft. head installed in the



View of the assembled bucket wheel of the largest impulse wheel in the world. Each of the buckets weighs 1000 pounds and the assembled wheel 25 tons.

of the growing application of the reaction or so-called Francis type for heads between 500 and 1000 ft.

It is only for the past few years that the application of the reaction wheel to high heads has been considered good practice. In 1905 the installation of a capacity of 9700 hp. in a single reaction runner under 550-ft. head at the Centerville plant of the California Gas & Electric Company was severely criticized, as it meant pioneer engineering work far ahead of any precedent in the way of capacity or head for the type in question. Similarly, the 13,000-hp., 375-ft. head single runner reaction turbines installed in the plant of the Great Northern Power Company near Duluth, Minn., were openly received with considerable skepticism on the part of many engineers. These two plants, together with the 440-ft. head, 10,000-hp. units installed in the Grace plant of the Telluride Power Company, gave the



Assembly of the needle regulating nozzle, pressure regulator and governor for the 30,000-hp. impulse turbine units of the Caribou plant.

Kern River plant No. 3 of the same company. Operating data on plants using reaction runners for heads as high as 800 ft. is lacking, but the leading turbine builders of the country are willing to offer large capacity units for heads probably up to 1000 ft.

The entire question involved is simply a comparison of the advantages of first cost, small floor space and higher efficiency obtainable with the reaction type of units against the greater simplicity, smaller liability towards wear, and greater ease in renewing wearing parts obtainable with the impulse type.

The choice between the two types available for the Caribou plant was made after a very extensive series of studies of different types. The multiple runner impulse wheel, for example, possessed certain advantages from a standpoint of gain in generator efficiency, due to the higher speed and saving in first cost, and due to the smaller size of working parts of the wheels. It was discarded on the overall consideration that it was not the simplest arrangement that could be worked out and would not incorporate the fewest number of working parts. It was considered that these features would in the long run intro-

duce elements of wear and complications that would defeat the economy effected by the higher speed.

The reaction unit was studied very carefully. The units were worked out in physical dimensions and, contrasted with the unit finally adopted, effected considerable saving in floor space and in the machinery proper. It also possessed efficiency characteristics several per cent in excess of those obtainable with the impulse type. In addition all of the parts to be handled during erection, and during any dismantling for renewal of working parts, were considerably lighter.

Impulse Wheel Adopted

The unit finally adopted comprises a double overhung impulse turbine each wheel of which is driven by a jet from a single needle nozzle. There are but two bearings in the unit, the generator rotor being carried between them, the wheels being carried on an overhang of the shaft outside of the bearing. This gives a compact and simplified arrangement with the smallest number of working parts.

Prior to this installation, the largest impulse wheels in the world were the 20,000-hp., 2000-ft. head units installed in the Big Creek plants No. 1 and No. 2 of the Pacific Light & Power Corporation. They are of the same general arrangement as the units in the Caribou station and were designed by the same engineers. The Big Creek units possess physical dimensions considerably smaller than those of the Caribou units. For example, the jets were in the neighborhood of 6 in. in diameter, whereas the nozzles of the Caribou units are capable of delivering jets 11 in. in diameter. Both installations, however, possess common characteristics, such as the same type of double overhung construction, the same type of needle regulation, and double arrangement of governors and pressure regulators.

It was largely the very successful performance of the Big Creek units together with a conservative policy in adhering to the most rugged and reliable type of machines that led to the selection of the impulse type for the Caribou station rather than

any refined analysis of efficiency only. In other words, reliability was the dominant feature influencing the decision.

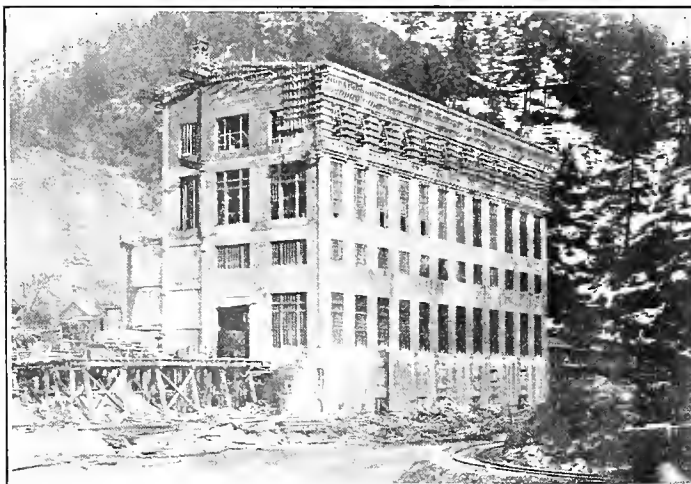
Two units are now installed, having been officially started in operation in June, 1921. Incidentally, it may be mentioned that within one month from the time the units were first turned over for drying out, the erecting superintendent had left the plant and the units were carrying full load. They have been in service continuously since their initial start and have developed in excess of 35,000 hp. under emergency conditions.

Each Generator Has Two Impulse Wheels

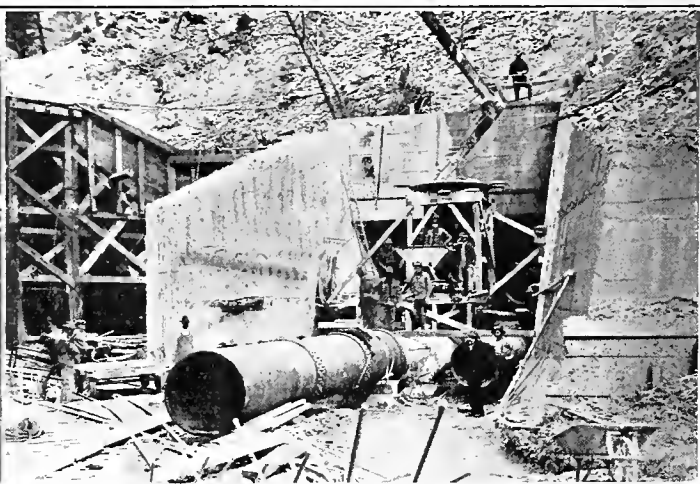
Each unit consists of a generator and two impulse wheels, one placed on each end of the shaft. These wheels are entirely independent in their action, each having its own needle control, oil pressure governor, pressure regulator and gate valve. In other words, the governors and pressure regulators are not interconnected, except that the former have their flyballs driven from the same shaft.

For by-passing the water in case of quick closure of the needle by the governor in response to a certain rejection of load, the pressure regulator is built as a governor-actuated water saving device, thus responding only to quick motion of the needle controlled by the speed governor. However, the pressure regulator is also automatically pressure operated in order to protect the pipe line against serious pressure rises produced directly in the pipe line, such as may occur when foreign matter lodges in the throat of the nozzle and partly clogs the orifice. This is effected in a very simple manner, requiring no additional device on the pressure regulator.

The two governors of each unit divide the load evenly between them, owing to the fineness of adjustment provided for permitting this division and owing to their high sensitiveness. They are not mechanically or hydraulically interconnected, each being actuated by its own flyball independently and each operating the cylinder and piston which controls the needle of the nozzle.



Construction view of the Caribou plant of the Great Western Power Company which was officially opened in June, 1921. This power house will have an ultimate capacity of 120,000 kw., in six units.



Building the penstock. The water runs through three tunnels, the entrance of the last being shown here, before emptying into individual penstocks and thence to the water wheels.

Efficient Warehousing Methods Reduce Cost of Distribution

Orderly and Convenient Arrangement of Warehouse Eliminates Errors and Enables Manufacturers' Representative to Speed Up Handling of Materials and Give Better Service

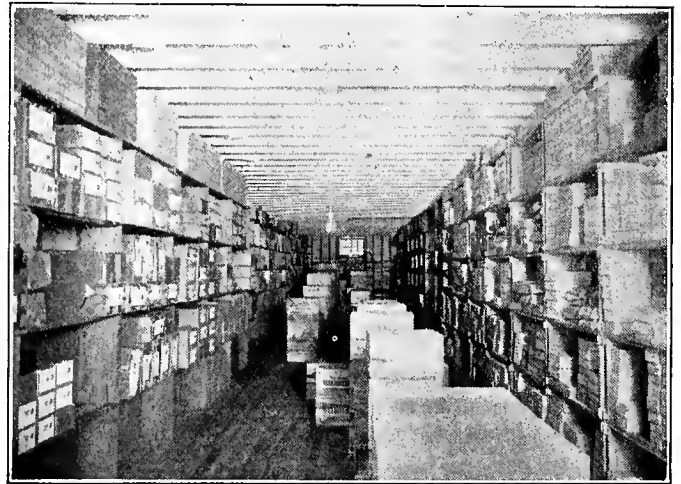
THE manufacturers' representative has long since proven his place in the chain of distribution of electrical products on the Pacific Coast. Since he does not deal directly with the consumer, nor, as a rule, maintain elaborate window displays, he is perhaps not widely known outside of the trade.

The manufacturers' representative is the salesman of the factories he represents. He is their agent on the business firing line who keeps in close touch with the jobber distributors, contractors and in some cases consumers. The manufacturer is thus assured that an uninterrupted supply of his product is reaching the consumer through the personal serv-

do not ordinarily display to advantage. The institution referred to is that of Allied Industries, Inc., whose main offices and warehouse are located in San Francisco, with similar distribution facilities in Los Angeles and Seattle. This organization has combined efficient warehousing methods with excellent merchandising in the handling of such materials as conduit, wire, porcelain specialties and switches. This type of material once installed is forgotten, but it plays a major part in insuring the proper functioning of an electrical installation. It is principally the concern of the contractor and hence does not receive much consideration from the actual con-



Material received at the warehouse can be speedily stacked in its proper bin or rack by the use of four wheel trucks.



Each bin or shelf is provided with perpetual inventory card which shows at a glance the amount of stock on hand

ice and attention of his representative. The manufacturers' representative usually specializes on a few kindred lines, generally on a consignment basis, and sells in comparatively large lots to contractors and jobbers. In addition to matters of sales policy, the maintenance and storage of warehouse stocks of the various lines which he may represent is of great concern.

Orderly and convenient arrangement of merchandise in any organization speeds up the handling of commodities, insures against errors, eliminates delays, reduces costs of handling and storage, saving time and money that can be profitably used otherwise. A neat and compact arrangement of warehouse material aside from the saving in floor space and ease of taking inventory is a valuable sales aid, as the warehouse is quite often the sales room. The character of the supplies in which the manufacturers' representatives deal is frequently such that orderly and attractive storage is difficult.

A description of the unique and efficient warehousing of a difficult class of products installed by a San Francisco firm should be of interest to all dealers engaged in merchandising materials which

sumer since it does not possess the "human interest" that is embodied in the percolator, the washer, the vacuum sweeper and other household appliances. That it possesses sales possibilities beyond that ordinarily assigned it, is shown by the accompanying illustrations.

In the first illustration, thirteen carloads of pipe, elbows and fittings are shown. Observe the manner in which the stocks of galvanized and enameled conduit are arranged, graduated in sizes from $\frac{1}{2}$ in. to 4 in. Directly in front of the 10-ft. lengths of conduit are to be found the necessary accessories to the proper installation of each size, all of which are arranged so as to be easily accessible. The practicability of this method is realized both in replacement of stocks as well as in the filling of orders.

The other illustration shows a model arrangement of outlet boxes, switches and porcelain specialties, packed in cartons or unit lots, arranged in accordance with the varying sizes and types, to the ultimate convenience of those who buy or sell. Sufficient room is left for the use of a four-wheel hand-truck which greatly facilitates the filling of orders and the replenishing of stock.

How to Make the Electrical Cooperative Campaign a Success

Suggestions Brought Out at a Recent Meeting of the Industry in California for the Successful Operation of a Cooperative Campaign Through the Perfecting of Methods and Organization

SELLING the "spirit of the industry," that is, giving the public adequate knowledge of the platform in national, state, civic, commercial and industrial development, is the basic thought behind all cooperative campaigns, be they electrical or any other kind. With the ability of those in charge to accomplish this, rests the success or failure of any campaign. Yet before an attempt can be made to educate the public, those in charge and those members of the industry which the campaign affects must be sold the idea.

With these thoughts in mind, it is not difficult to outline a program of activities for the future, not only for the California Cooperative Campaign, but for any other of the six or more similar activities which are progressing in the West. Any program, however, should have a thorough organization for a background if it is to be successful. From advisory committee down through the various correlated committees to the campaign manager and field men, there must be cooperation. It is for the advisory committee to receive suggestions from all sources and to determine the policy and outline a program. It is for the campaign manager to see that the program is put over through the agency of his field operatives and the men of the industry who make up the many committees.

The fundamental principles behind a thorough campaign organization and a strong program, with special emphasis on the California Cooperative Electrical Campaign, might be summed up as follows:

Educating the Public: The matter of bringing home the electrical idea to the people is the fundamental idea behind a successful program if the public is to be interested in the necessity of encouraging electrical development, in the further consumption of electricity and in electrical apparatus and appliances. The program can be brought before the public through the elementary, grammar and high schools, the junior colleges, the universities, the women's clubs, the cooking schools and the civic clubs. Besides these points of contact, there are the electrical homes, the window displays and demonstrations, the education picture in the motion picture theater, the electrical film for clubs and country schools and education newspaper advertising.

Putting the Industry to Work: Proper organization of the industry itself must be perfected. One of the chief accomplishments of the campaign should be the bringing about of a closer relationship between the different branches of the electrical industry, and a better understanding of the responsibilities of each branch to the public as a whole. Cooperation of the advisory committee should be carried on to the extent agreed upon, but those in the industry assigned to individual work should be looked

to for results. To hold the attention of the industry with feature subjects is the duty of the advisory committee but the carrying to completion of these subjects rests with every worker.

Organizing the Committees: With a policy agreed upon and a program outlined and divided into subjects, the advisory body should choose the committees which are to carry out each part of the campaign. Members of committees should be selected from all parts of the state and the responsibility of supervising the work in their particular section should be impressed upon the members. Publicity and encouragement should be given to the work so that those participating would at all times feel that their efforts are being recognized and appreciated.

"Get-together" Meetings: The old and well programmed "get-together" dinners are probably the most effective way of selling the campaign idea. They should be held often. They should be held in every city of the state and they should represent the entire electrical industry. As a clearing house for ideas and a generator of good will, these meetings are invaluable.

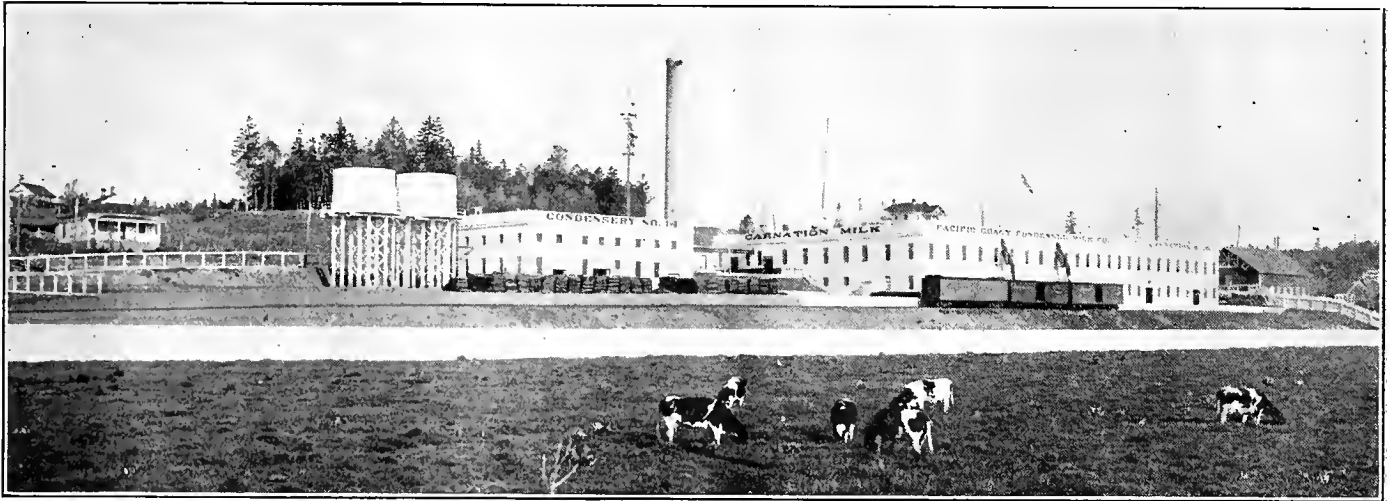
Suggestion Box: A suggestion box should be inaugurated which would serve not only as a safety valve, but also as a source of practical ideas in the conduct of the work.

Campaign Manager: The work of the campaign manager should be of an executive and not of a clerical nature. He should be in the field a large portion of the time, organizing new groups of workers and putting into effect and supervising the work outlined by the advisory committee.

Field Men: Too much dependence can be placed upon the ability of the campaign to make contact with the public through the field men, with consequent suffering. The field men should merely aid the members of the industry in bringing the campaign to the attention of the people. Like the manager, their work is largely that of organization and supervision. They should report to the manager often and to the advisory committee at least every other meeting. They should be questioned regarding any suggestions or criticisms they might have to offer regarding the campaign.

Meetings of the Advisory Committee: Too much time can be easily wasted at meetings of the advisory committee. Members should submit in writing to the manager before the meeting, a list of the subjects they wish to discuss and he in turn should assign a definite time limit to the discussions.

Convenience Outlet Campaign: A systematic check of all wiring jobs should be kept to show the proportion of convenience outlets installed in each new building compared to the number of lamp sockets. That is one of the pulses of the campaign.



The Carnation Milk Products Company has ten condenseries on the Pacific Coast all completely electrified. The electric power is used to operate sterilizers, filling machines, shakers, homogenizers, centrifugal pumps, labeling machines, can conveyors and fuel conveyors in a manner that minimizes the touch of human hands and vastly forwards economy and quality in the output.

Are You Profiting by the Economies of Electric Operation?

An Instance of What the Carnation Milk Products Company—a Truly Western Institution—is Doing in Forwarding Economy and Efficiency in Marketing a Leading Western Farm Product

By ROBERT SIBLEY

Editor, Journal of Electricity and Western Industry

SO rapid and overwhelming has been the advance of electrically operated material-handling apparatus in the West that the industrial manager must constantly be alert to seize every new opportunity of cutting down costs and improving his methods of material handling if he is to keep abreast of the times.

In the West where electricity is used per capita to a degree not approached anywhere else in the world today, comparative studies of the various industries should be helpful.

The instance here cited shows what can be done in this regard in the West in the handling of milk and its preparation for shipment throughout the world. Milk is basic in the rearing of the human family and its economic preparation for shipment and service in the home constitutes a self-interest appeal common to all. This article will deal with the Chehalis plant of the Carnation Milk Products Company with headquarters at Seattle, Wash. The Chehalis plant is a local factory that pays to farmers of that community one and one-half million dollars annually and has brought to life thriving farm units in its neighborhood impossible of existence without its advent.

Preparing the Milk for Canning

The cleanliness and efficiency with which the milk is handled are quite apparent to the most casual observer visiting this factory. The milk, after being thoroughly cooled at the farm, is placed in the usual dairy cans and delivered to the factory by motor-driven trucks. At the factory these dairy cans are placed upon gravity rollers, emptied and automatically washed and steamed immediately upon deliv-

ery and returned by motor truck. Meanwhile a sample is taken of each lot delivered—an accurate test as to the sweetness of the milk having been taken—and the milk passed by gravity into storage tanks. From the storage tanks the milk is drawn off into large open copper or glass-lined kettles where it is brought to the boiling point and drawn up into condensers operating at about a 26-in. vacuum. Due to this low pressure the milk boils violently and the evaporation of the moisture in the milk is rapid. This vapor arising from the milk is drawn off and condensed by coming in contact with a spray of cold water. The milk is thus brought down to its desired consistency and cooled.

Saving in Labor Costs

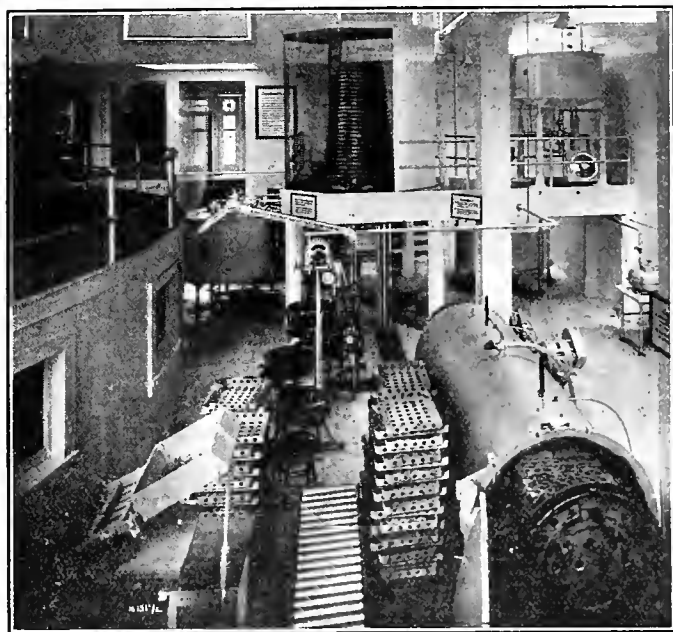
From this point on electricity plays an interesting and efficient role. Although the milk is now relieved of a large share of its former moisture, the microscope shows that butter fat contained in the milk still exists in small globules—microscopic in size—that must be broken down. By means of a 30-hp. motor the milk is forced through a series of disks with small grooved faces which under a pressure of 2000 lb. per square inch cause these globules or sacs to thoroughly break up and thus make a homogeneous content. This apparatus is known as a homogenizer.

From the homogenizer the milk is dropped over a cooling tower of pipes and its temperature lowered to about 40 deg. Fahr. Tests are then performed to insure a uniform standard and consistency. From the storage tank this standardized milk is next conducted to the electrically operated sealing machine which automatically fills and seals the cans. The

capacity of motor used to perform this work is only $\frac{1}{2}$ hp., and in this one piece of apparatus alone the labor of twenty girls is saved over former methods.

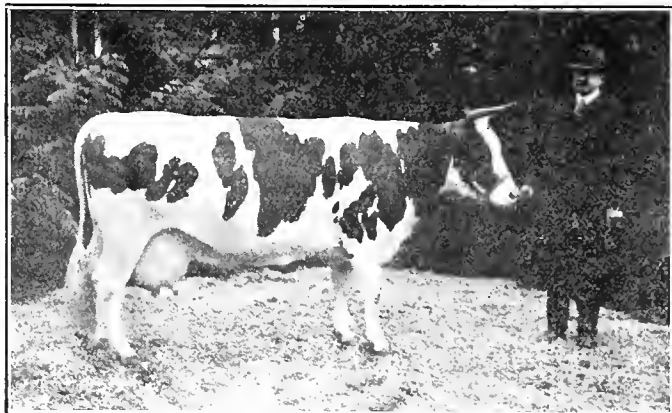
Insuring a Quality Product

The cans of milk after having been soldered, steamed and brushed electrically are checked by workers as they pass on to the electrically operated



The working model of a Carnation condensery. The coil (upper center) is a cooling coil. Below and in front of it is a filling and soldering machine. The boiler-like retort in the right foreground is a sterilizing retort and to its left are metal trays used to hold cans in the sterilizer. The large tubs on legs in the background are glass lined storage tanks.

elevators and conveying apparatus from which they are placed in metal trays of 24 cans each. Units of sixty of these metal trays are put into a large revolving retort, electrically operated, in which the canned milk is revolved under a high temperature and is thoroughly sterilized. From this retort the product is conveyed to a room heated to the most favorable temperature for development of bacteria. Each individual can is here numbered and after maturing is again tested to see that nothing but standard quality milk leaves the factory. By this careful process the company assures a safe product being



E. A. Stuart, president of the Carnation Milk Products Company, and Segis Pieterje Prospect, the world record cow. An ordinary cow will produce 3,000 to 4,000 lb. of milk per year, but Prospect, in a test lasting 365 days, produced 37,381.4 lb. of milk containing 1,448.68 lb. of butter fat. This exceeded the previous record, held by Tilly Alcarta of California by 3,950 lb. of milk and 122 lb. of butter fat.

sent out and has established a marked reputation for evenness, uniformity and reliability of product.

From these testing rooms the canned milk is placed on flat trucks and delivered to the electrically operated labeling machines where the familiar Carnation label is placed upon the cans which are then dropped into wooden boxes nailed by electrically operated machines. They are then placed upon hand trucks and quickly loaded into freight cars standing near by to convey them to the markets of the world.

This story of the electric drive in industry has been written to stir the imagination of industrial executives throughout the West to the possibility of saving from new and undreamed-of applications of electrical material-handling devices. Upon the proper solution of this problem in every industry of the West depends usually the question of dividends or no dividends. Are you using in your work the same initiative, daring, enthusiasm and constructive imagination that has enabled Mr. E. A. Stuart, the president of Carnation Milk Products Company, to become a successful international figure in his industry?

Electricity Assists in Gold Dredging

New Dredge Constructed for California Company Has Ninety-foot Vertical Digging Radius

AN electric dredge was recently built for the Marysville Dredging Company and is doing continual service in western construction projects. It has 16 cubic foot buckets arranged to dig 70 feet below the water level, and at the same time handle a bank of 20 feet above the water level. The general dimensions of the hull are as follows:

Length	155 ft., 6 in.
Width	58 ft.
Depth	11 ft., 6 in.

The digging ladder is of the solid girder type, 133 feet long and weighs 126 tons, without rollers, buckets or tumbler. The stacker ladder is 146 feet long and is of the lattice type. Its upper deck is made in the form of an inverted V, so that material spilling off the belt does not collect thereon, but drops into the pond.

The main drive motor is 400 hp., and is belted up to the main drive pulley, which is 12 feet in diameter with a 36-inch face—this is of the solid type wood construction, the same as used for stamp mills. This main drive motor also operates the main ladder hoist, there being two V type clutches permitting either, or both, to be operated at the same time. The brake bands on the ladder hoist drum are compounded off the countershaft.

The motors for the various parts of the dredge are as follows:

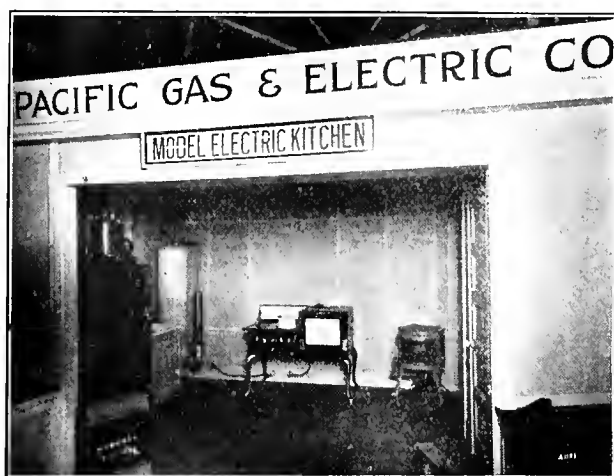
Main drive	400 hp.,	505 r.p.m.
Main winch	50 "	570 "
High pressure pump	150 "	600 "
Low pressure pump	75 "	600 "
Jet pump	50 "	1200 "
Screen drive	100 "	580 "
Stacker drive	60 "	695 "

Power is brought aboard the dredge by means of 750 feet of one three conductor stranded armored cable, and is transformed by means of three 200-kw. with 4000-v. primary to 460-230-v. secondary.

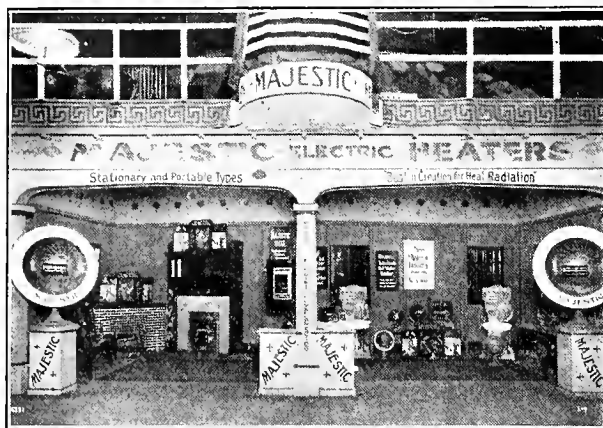
Quarter Million People View Western Industry Show

One of a Pictorial Series Featuring Interesting Applications of Electric Service, Advances in Home, Industrial and Power Construction and Noteworthy Developments in Western Progress

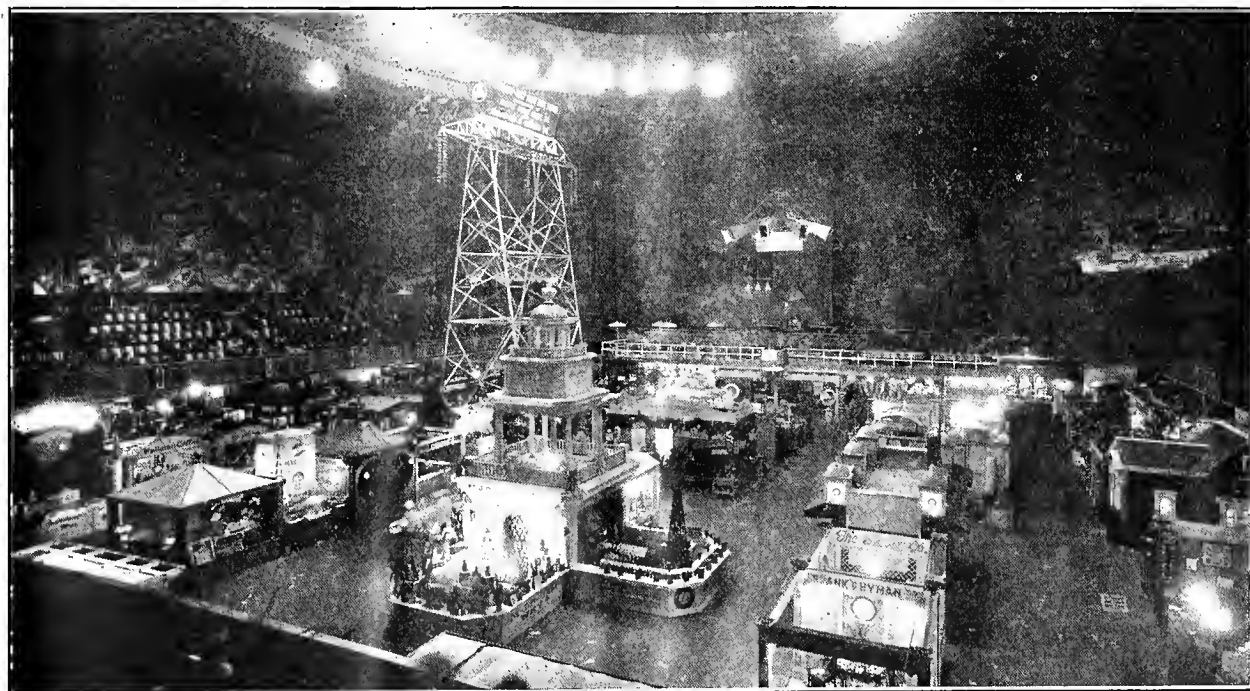
WESTERN industrial products have been featured recently in several stupendous exhibits in various sections of the West, each of which has brought out a record attendance and much local interest. Following in the footsteps of Los Angeles, which staged an Industrial Show some months ago in the new Terminal Building, northern California industries more recently opened a still more extensive three-week display in the Civic Auditorium of San Francisco. Over 250,000 people attended the show during the period from November 19th to December 10th, paying the admission fee of twenty-five cents for the privilege of viewing these exhibits. The main floor of the audito-



rium was decorated with mural representations of typical western industrial scenes and effectively illuminated for night effects. Five hundred exhibitors were included in the main and auxiliary room displays.



Dominating the exhibits was the 220,000-volt steel tower erected by the Pacific Coast Steel Company in conjunction with the Pacific Gas and Electric Company, who had a demonstration of electric home appliances in its base. A loud speaking transmitter hung over the center of the area and all announcements and much of the program were made audible to all present by its use. Many electrical firms were represented with effective exhibits, prominent among them the Majestic Electric Company, one view of whose booth is here shown. The electrical contractors and dealers demonstrated electric appliances in a favored position, the Great Western Power Company displayed cost figures on the operation of electric appliances and data on company development and several local electrical manufacturers either combined or had individual booths in various sections of the floor. Several industries had exhibits following through the process of manufacture of their products, in most of which electrical operation was prominently featured.



Self Improvement in Salesmanship

A University Study Course for the Man who Meets the Public in
Every Line of Business

BELIEVING that an understanding of the principles of salesmanship is the greatest need of the business world in the West at the present time, the Journal of Electricity and Western Industry announces a study course in "Self Improvement in Salesmanship" to begin in the January 1st issue. We have been fortunate in securing Professor William A. Russell, Professor of Salesmanship at the University of Washington, and one of the foremost authorities in the West in this field, to prepare this course. Professor Russell is in charge of the course in salesmanship which is being conducted by the Northwest Service League throughout Washington and Oregon and is closely in touch with the concrete needs of the merchandising branch of the electrical industry, as well as with the fundamental selling problems of all business, of which the sales department is conceded to be the most important branch.

The course will consist of fourteen lessons, closely tied in with the series of lectures making up the work of the classes established by the Northwest Service League, and may be used as a text book in connection with class work or as an independent study course for those who wish to improve their sales methods by individual application.

The subject matter covered will include the salesman and the impression he makes upon the buyer, the buyer himself, the sales process, the service of selling, the sales department and the relationship between the salesman and his firm and the salesman and the community.

This service of the Journal of Electricity and Western Industry is in line with the present interest



WILLIAM A. RUSSELL

Professor of Sales Management of the College of Business Administration, University of Washington, and Educational Director for the Northwest Electrical Service League. Professor Russell is the author of a university study course on "Self Improvement in Salesmanship" which starts in the January 1st issue of the Journal of Electricity and Western Industry.

in the subject of salesmanship manifest in all parts of the West. The California Electrical Co-operative Campaign is planning active work along this line beginning with the new year and the cooperative leagues of the Intermountain district are seriously considering including this work among their major activities in the near future. In the northwest, the Northwest Electric Service League has recently organized its fifth class in salesmanship, to be held in Everett, Wash. The first class was held in Seattle and has already completed a ten weeks' course. A second was later established in Spokane during October with a twelve weeks' schedule of work. Tacoma and Portland have more recently formed similar classes, with enrollments varying from fifteen to thirty.

Not only is salesmanship training valuable in preparing new men for sales work, but the need is perhaps even greater for improving the salesmanship of those already engaged in "selling the public."

Undoubtedly the weakest point in the retail electrical industry at the present time lies in the lack of knowledge on the part of the sales force of the principles of selling.

The course is primarily designed to meet the needs of electrical contractor-dealers and their store assistants, but the principles laid down are basic and should meet the requirements of every man who comes in contact with the public. There is no line of business which does not demand some form of selling skill. Professor Russell's illuminating analysis of the subject will prove of interest to every branch of western business.

Increasing Production in Industry

Shortcuts in Management and New Power Applications That Have Reduced the Cost of Manufacturing Processes or Increased the Rate of Production.

Ideas and Suggestions by Practical Men.

Incinerator for Mill Refuse Made of Brick and Concrete

An incinerator for destroying mill refuse designed for low first cost and long life has been in service at the plant of the Pacific Box Factory in San Francisco approximately two years and is reported to be wholly satisfactory. It consists of a concrete shell with fire brick lining, 14 ft. in diameter at the base and 60 ft. high, built at a cost of \$6000. Thus far the capacity has not been reached by the maximum rate at which it has been possible to blow material in through the 18-in. feed pipe. As much as 400 cu. yd. of refuse have been consumed in 9 hours and it is claimed that the greater the rate of feeding the hotter the fire and hence the greater the capacity. Features of the design are the means provided for the expansion of the brick work and the arrangement of vents for cooling concrete, thus increasing the life of the structure.

Construction

The outer shell of concrete was made in two pours, each pour being made in a day. The first pour carried the structure to a height of 28 ft. and left reinforcing projecting for bond. This was the only joint as the second pour completed the structure to full height. Self-supporting forms of the ordinary type were built up on the inside and outside forms were built up independently supported by scaffolding. The only connection between the two sets of forms were the tie wires run through from side to side to prevent spreading. A 1:2:4 mix was used, delivered by a hoist in the scaffold. Dimensions and arrangement of reinforcing are shown in the accompanying illustration. Inside forms were removed in about four days, but outer forms were left in place as long as possible as a protection against wind and weather.

Brick in Two Sections

The brick lining put in after the inside forms were removed, was likewise placed in two sections, the upper section resting on a shelf in the concrete and being entirely independent of brick work below. This separation made it possible to put an expansion joint in the brick work which is said to be the most important feature of the design. The brick of the combustion chamber can expand upward without lifting the weight of the lining above, thus preventing the overloading that tends to crush or buckle the lining and shorten its life.

Heat in the combustion chamber ranges from 1500 to 2000 deg. F. and is said to cause the brick lining to expand 3 in. in a vertical direction. This movement is taken up in the expansion joint between the two sections of brick

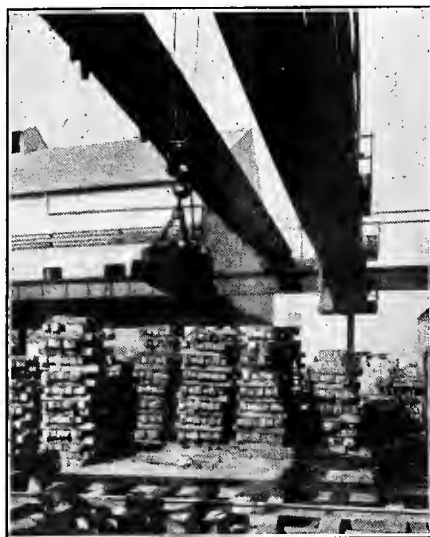
THIS DEPARTMENT

will be devoted to a discussion of practical problems of industrial operation and management. Readers' requests for information will be published in each issue, together with the answers to previous questions. It is hoped that readers will take full advantage of this opportunity to profit by the practical experience of others and to give others the benefit of their own discoveries. Space rates will be paid for answers which are published.

work. The clearance between the lining and the outer concrete shell is nowhere less than 1 in. and this is more than the expansion of the brick work circumferentially.

Air Vents

The concrete shell around the combustion chamber is octagonal in plan, thus affording a considerable air space between concrete and brick. Sixteen 4 x 4-in. terra-cotta vents through the concrete, just above ground level, admit cool air into this space. Heated air passes out of this space through corresponding vents near the top of the octagonal section 28 ft. above the base. In the upper circular section the one-inch space between brick and concrete is vented by one-inch galvanized pipe set in the concrete at intervals that place one vent in every 16 sq. ft. of surface.



Ingot yard magnet crane equipped with 20-hp. motor. Electromagnets are used for handling and transporting steel wherever possible. The magnet shown is used for stacking steel ingots each weighing 1460 lb.

A concave curve or corbeling-in of the brick work toward a smaller diameter throat at the top is provided which is said to improve the draft at the same time that it reflects the heat in such a way that high temperature and excellent combustion are secured. A very small quantity of ash accumulates as the draft and high temperature are such as to reduce the residue to a minimum and to carry away a part of it as very fine particles that escape in the draft. No grate bars are used, the concrete foundation at ground level being covered only with a layer of fire brick on the flat.

Combustion Controlled

A means of controlling the rate of burning and, to a certain extent, the temperature of the brick lining, is provided by four 20 x 20-in. iron doors at a height of 19 ft. above ground extending through both the concrete and brick. These doors, controlled by rods running down to a convenient height, are opened after the fire is well started and by admitting cold air near the top of the combustion chamber prevent excessive heating of the brick work. The inlets covered by these doors incline sharply upward.

Draft or suitable combustion conditions is secured by means of short tunnels at ground level, each of which has an indirect air entry by way of a pair of iron doors. These doors are held open as desired by ratchet latches and are set according to the direction of wind. At the outer end of these tunnels a wall with fire brick facing takes the direct heat from the combustion chamber, except in the case of one tunnel provided with a large end door for clean-out purposes and for convenience in passing in refuse too large to be blown in through the 18-in. pipe.

No Spark Danger

The top of the incinerator is covered with screen of ¼-in. mesh to catch sparks, and a gutter is built in the concrete around the top which can be flooded when desired. A 1½-in. galvanized water pipe runs up to this gutter and a 2-in. drain pipe leads down from its lowest point.

In applying a design of this sort where hot air is needed for some auxiliary use, such as in a dry kiln, the concrete shell could be made octagonal in cross-section all the way up to increase air volume between shell and lining. Vents to the outer air would be omitted and a blower at the base would draw the heated air into a pipe for delivery as desired.

The incinerator was designed by Captain W. W. Breite, structural engineer of San Francisco, and built by Herman Ludwig who has been granted a patent under the name of the Ludwig incinerator and hot air dry kiln.

Coating of Bronze Saves Painting Hudson River Bridge

How an annual saving in upkeep of \$400,000 in the proposed Hudson River Bridge will be effected by means of a new and important feature of bridge construction, is described by the engineers who have prepared the plans for this colossal undertaking, as follows:

"A new and highly important feature introduced for the first time in a bridge of this great magnitude is that practically the whole of the Hudson River Bridge will be weatherproof.

"That is to say, its steel work will be so completely enclosed with rain-and-moisture-excluding bronze, that the annual cost of repainting—a most serious item in the upkeep of a big bridge—will be reduced to a minimum.

"That this little matter of protection figures in maintenance economy and is indeed vital, is realized when it is understood that it is expected to reduce the cost of painting, which, if the entire surface of the steel structure were exposed, might easily amount to \$500,000 annually, and as only about 15% of the structure will be exposed to the weather, the upkeep will be reduced accordingly."

In the Hudson River Bridge there are a pair of suspension trusses or inverted arches spaced 160 ft. apart, center to center, each truss consisting of two cables from 60 to 80 ft. apart vertically, with vertical panels and diagonal bracing between to supply the stiffening under passing loads. From the two suspension trusses vertical eyebars are suspended, and carry the double-deck floorway.

On the proper strength, functioning, and permanence of the chains depends the integrity of the bridge. Each eybar is separated several inches from the adjacent bar, so that it can be inspected at any and all times. Each cable is enclosed in a covering or gallery of bronze for protection and to permit of inspection, so that once the eyebars are

painted they will be well protected from the elements.

The chord thus assembled is eleven feet in thickness, as compared with fifteen inches for the wire cable of the Brooklyn Bridge, and with the enclosing covering is fifteen feet in external diameter.

The estimated cost of the bridge proper has been placed at \$100,000,000. By the use of the bronze as a protection against the weather, a yearly saving in upkeep of more than \$400,000 is expected.

Dish Washing Machines Found to Be Efficient

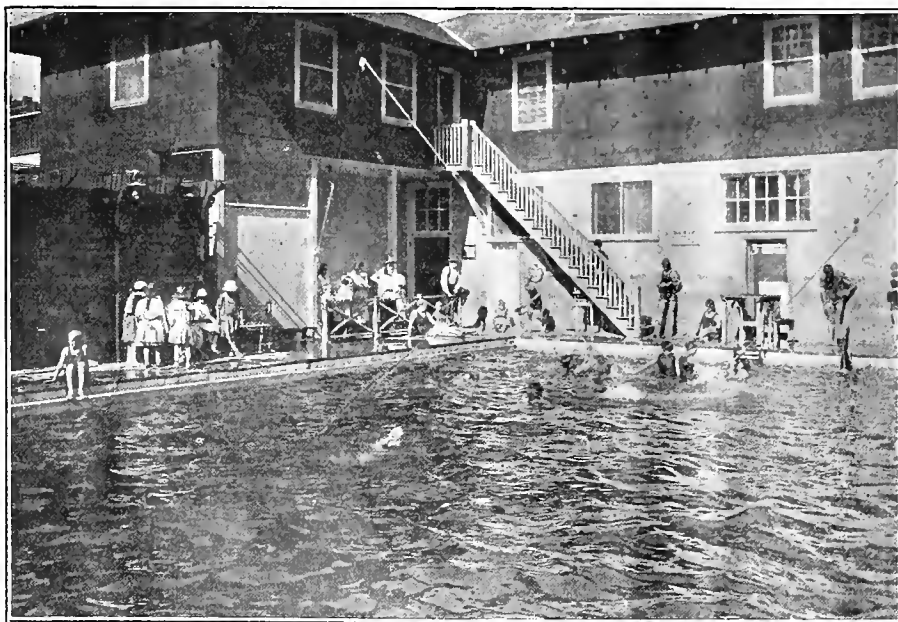
Replies to a questionnaire sent to several thousand restaurant owners, by "American Restaurant," regarding dish washing show that all but one-seventh of one per cent use some kind of dish washer. All different makes are used, some restaurants using more than one make. The great majority report satisfactory service, the only complaint made being the waste of water. The consensus of opinion was that the belt type of washer was best for heavy dishes and that the tank with tray type was best for fancy dishes. One-tenth of the answers indicated difficulty in obtaining dish-washing help. The answers regarding breakage were hard to analyze. In one instance a cafeteria serving 6000 people daily reported a loss of \$6700 per year; another restaurant serving 400 daily reported a yearly loss of \$600. Over ten per cent of the breakage results from dish washing. None of the restaurant owners reported price as a controlling factor when choosing installation. A machine that fits in a corner seemed to be preferred, and fresh water rinse was held to be essential. Breakage was reported to be reduced by the use of machines in addition to doing a more efficient job of washing. The average cost of operation of washing machines was \$1.60 per 1000 dishes.

Practical Suggestions for Making Disconnecting Switches

In a recent issue of the "California Safety News" published by the Industrial Accident Commission of California several methods are suggested for the construction of grounding devices to be used in cleaning or repairing electrical equipment. The report says in part:

"For circuits without much power back of them, such as the safety man will come across on the premises of industrial plants (small transformer houses or local substations receiving the high-tension power), it is easy enough to provide grounding devices that are inexpensive and safe to use. First you make a ground connection onto some nearby water pipe or otherwise. To this ground you connect either permanently or temporarily a suitable length of flexible cable which splits into three branches, one for each phase of the circuit or equipment that is to be grounded. The branches may have their free ends in the form of hooks or spring clamps or thumb screws for making contact on any available bare spots of the circuit, such as the disconnect switch or the oil switch terminals. Something more is needed, however, for the safety of the man who is applying the ground. He should not have to use his hands directly in hooking or clamping the ground into the circuit. If the circuit should be alive through mistake, there will be a flash and the man should be some distance away from it. Therefore, you should provide three switch sticks or insulated poles such as are made for operating disconnect switches. On 13,000 volts, the sticks will be about four feet long; on 66,000 volts, perhaps 10 or 12 feet long. You fasten these sticks permanently to the three ends of the grounding device and the operator takes hold of the sticks only when applying it to a circuit. In this way a man has a fighting chance of getting away from the flash that follows if a mistake is made in applying the ground. This device has the further merit of flexibility in application to two or more locations so that the protection can be applied not merely at one main bus or on one floor level, but anywhere throughout the station at the exact point where the repair work is about to be done. Other forms of grounding device have been used with practical success.

"I have been considering the grounding of circuits that have only a limited amount of power back of them. In a big central station or hydroelectric system any scheme of flexible grounding device to be applied while the operator is near by (or even in the same room) becomes almost useless from a safety standpoint or as an operating proposition. In such cases of large power when there is a short circuit resulting from any cause whatever—a breakdown of the insulation, a man getting across live parts or a misapplied grounding device—a tremendous arc develops, due to the enormous concentration of energy that is fed into the short circuit. The space becomes a seething furnace and everything that is in the path of the arc is melted down or rather directly vaporized. I will not presume to discuss this problem of limiting the destructiveness of a high-powered short circuit."



Community center swimming tank provided for employees of the California and Hawaiian Sugar Refining Corporation at their refinery located at Crockett, California. The provision of recreation facilities has long been recognized by this company as an efficient method of increasing production in industry.

Western Dealer, Jobber and Agent

Business building suggestions for the store—Distribution and warehousing methods—Advertising and sales promotion ideas

Rocky Mountain League Issues Electric Home Booklet

Under the title of "How to Plan an Electrical Home," the Rocky Mountain Electrical Cooperative League has issued a 16-page booklet containing descriptions and drawings of the recently completed home in Salt Lake City together with a detailed wiring plan of the house with an explanation of what each outlet has been provided for. The booklets have been issued with a view of distributing them through the central stations, manufacturers' agents and contractor-dealers.

Carrying an appeal for the installation of convenience outlets, the book describes what has been done in the Salt Lake home with the fifty or more appliances which were exhibited. It emphasizes the fact that no home can be advertised as modern at the present time unless it contains such convenience outlets together with a separate circuit for power appliances such as a range, a water heater, refrigerator and similar devices which can be operated more economically at power rates.

Perhaps one of the most valuable aids for the prospective home builder which the booklet contains is a list headed "Things to be Remembered When You Wire an Electrical Home." Some of the suggestions offered follow:

In general, receptacles should be installed in the baseboards. But in certain cases there are special advantages in having them at some other height such as (1) waist high receptacles for connecting the vacuum cleaner, so that the operator will not have to stoop; (2) directly beside the serving table in the dining room; (3) beside the kitchen table; and (4) beside the tea table in the living room.

In every long hall install enough receptacles (preferably knee-high or waist-high) so that the vacuum cleaner can be used freely, without plugging into first one room and then another.

Make it a general rule to install duplex receptacles in every room, and without fail in those rooms that are provided with two or more baseboard outlets.

Be sure that the meter board is placed so that the meter can be read by the lighting company's man without entering the house.

In the laundry install a special connection for the flatiron, with a red light to show when the current is on. If ironing is to be done in the kitchen, locate a flatiron there. If there is a sewing room, another will be needed there, too. And if each ironing outlet is provided with a special fused receptacle, in case of trouble with the iron, the local fuse will blow, without disturbing the rest of the house.

Selling Electrical Appliances to the Housewife

A Series of Suggestions to the Progressive Contractor-Dealer on Merchandising Methods Applicable to Women Customers

Who buys ninety per cent of the electrical labor-saving devices used in the home? Technically it may be the man of the house who makes the purchase for it is he who lays out the money, but in almost every case it is the housewife who prompts the purchase, dictates which store is to be patronized and who chooses the appliance to be bought.

The psychology of the woman customer is foreign to the majority of the contractor-dealers who are trying to compete with department stores, hardware stores and drug stores in the sale of electrical appliances for the home. He fails to take into consideration the elements which enter into catering to the housewife. An inestimable amount of business is lost annually by the contractor-dealer who fails to keep such simple rules as having his salesroom well arranged and keeping it spick and span. He forgets that attractive furniture, cleanliness, well displayed stock, and courteous and well dressed salespeople are indispensable in appealing to the class of women who are in the market for appliances for the home.

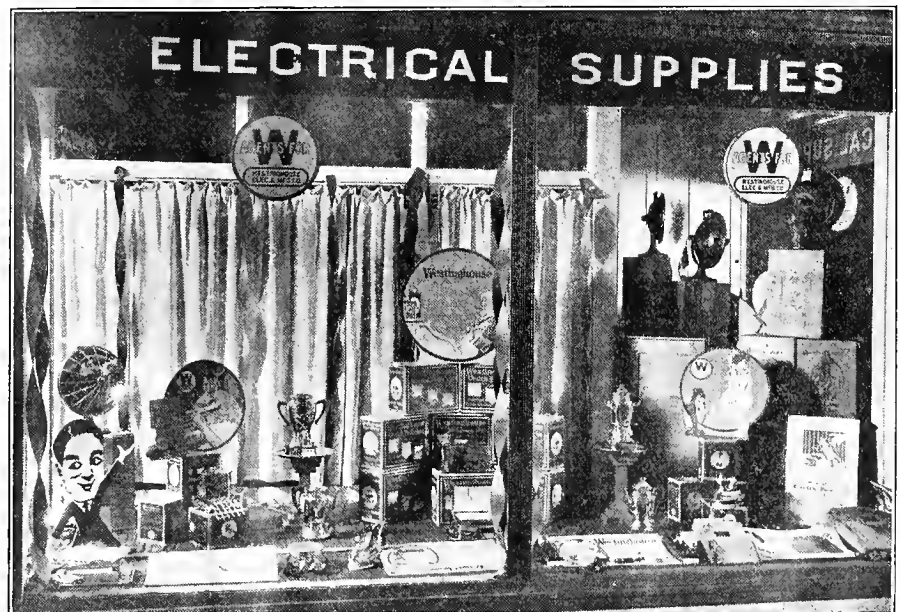
Yet with all of these things, he may fail to draw this class of trade simply because he does not know that in selling electric appliances he is selling

service. Selling an appliance which is made up of metal, wood and a cord and selling the service which this same article will render are two distinct procedures. The dealer who attempts the first will usually fail while he who follows the latter practice gets business.

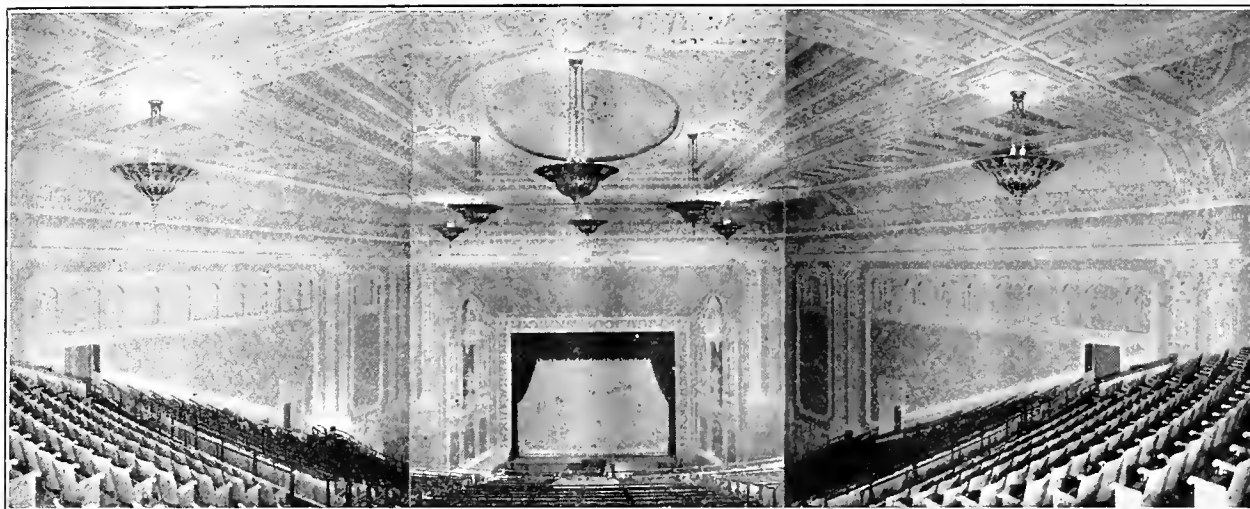
What sells a phonograph? Surely not the operating mechanism, the wooden cabinet and other material features of the machine. The enjoyment which it will bring to the home, the pleasure which will be derived from the machine and the many other humanized selling points usually clinch the sale.

The same arguments apply to selling electric labor-saving appliances to a woman. Can it not be argued that such a device will bring equal enjoyment by reducing labor at the same time furnishing comfort, convenience and cleanliness in performing a partially distasteful household task? The electrical dealer has even a greater advantage for he is selling a recognized necessity in modern living.

All women with the first instincts of good housekeeping have a strong desire for home betterment, particularly along the lines of bringing greater ease and comfort in the execution of domestic duties and consequently is the best prospect.



Many manufacturers take definite steps to aid contractor-dealers and appliance shops in carrying on a Christmas campaign. Sales literature, ideas for advertisements and plans for window displays are some of the cooperative steps which have been worked out. The Westinghouse Electric and Manufacturing Company has provided the above window suggesting gifts for each member of the household, for dealers and stores carrying the Westinghouse line of appliances.



Interior of the new \$2,000,000 Granada Theater, San Francisco's latest contribution to the realm of the tenth muse.

Granada is Newest S. F. Picture Playhouse

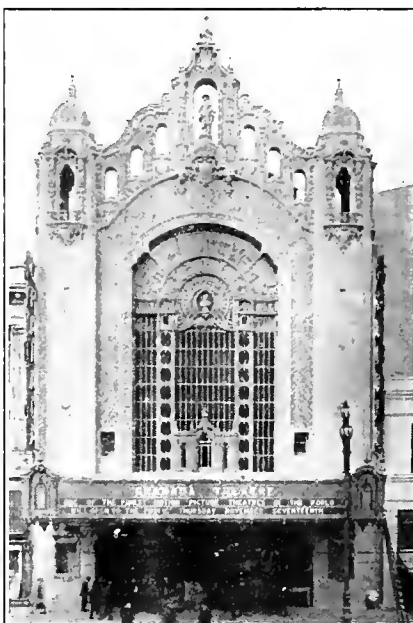
Lighting in \$2,000,000 Theater Considered Work of Art

California is the home of the tenth muse, motion picture art, and San Francisco has added the latest contribution to the realm of this same muse, the \$2,000,000 Granada Theater. Electricity as the modern stage artist, as a means for marvelous lighting effects and as a means of communication throughout the building, plays an important role in this newest and most modern theater.

Experts have claimed that the lighting system in the Granada is the most perfect in any motion picture theater in America. It is a tribute to the electrical West for the fixtures and effects were designed, manufactured and installed by a western firm.

Theater lighting is a comparatively unexplored field in which the illuminating engineer may find new opportunities. It is a field but slightly developed and one containing immeasurable possibilities. The Granada Theater represents the most advanced step in this field.

Every important light in the theater has four color possibilities, amber, white, red and blue, with any combination of the



The exterior of the theater is imposing.

four available. Every light can be dimmed down to darkness by the dimmer plates controlled by the switchboard. These plates carry a total load of 514,000 watts when every light is burning. The switchboard, the largest of its kind in any theater in the world, is of the preselective type and controls the thirty different light centers in the building. The main switchboard is located in a fireproof concrete casement in the basement but is controlled from the side of the stage.

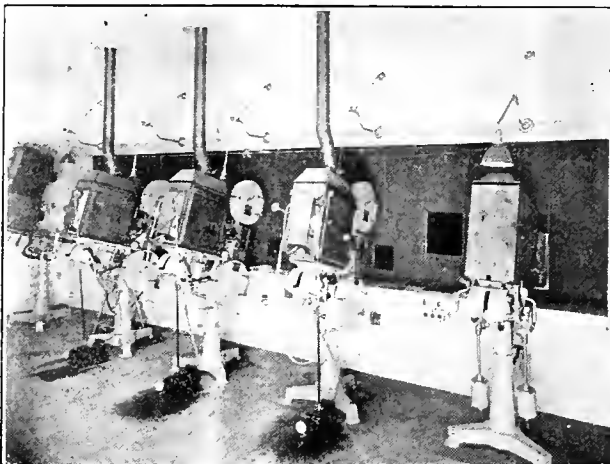
The stage is illuminated from above by 190 150-watt lamps with a like number for footlights. In addition there are pockets in the walls for forty-eight spot lights. Color effects can also be produced with a battery of powerful lights hidden in the proscenium arch.

In addition to the many bracket and banquet lamps throughout the theater, the main auditorium is lighted by eight colossal suspended lamps measuring seven feet across, each provided with twelve 500-watt lamps. Amber shades cover the cast iron frames of these fixtures. The balcony is lighted by six smaller suspended lamps. All of the lamps were manufactured by Thomas Day & Company, while the wiring was done by the Decker Electrical Construction Co.

Power for the building, equal to that used in four ordinary city blocks, is furnished jointly by the Pacific Gas and Electric Company and the Great Western Power Company.



The interior of the lobby of the theater is a spot of beauty. Unique architecture, ferns and exotic plants add to the attractiveness. The lighting is especially effective, producing a soft glow.



The mechanical details of the new theater are just as carefully worked out as the lighting and architecture. The interior of the projection room contains five machines, all motor operated.

Original Ideas for Boosting Appliance Sales

"How can I boost a certain appliance?" has become a common phrase among the contractor-dealers and proprietors of electrical appliance shops. Dealers throughout the country are looking for original ideas which will tend to attract attention to their stores, giving them prospects to whom the salesmen may offer selling arguments.

In front of the Renard-Stary Electrical Shop, 942 West Seventh Street, Los Angeles, there is an old sewing machine bedecked in brilliant colors and carrying a small motor attachment. On the sides are arrows pointing to a pedal on the sidewalk with the message, "Step on It." The action of the pedal starts the motor, the sewing machine at the same time stitching an endless piece of cloth. Another card invites customers inside for a demonstration.

The entire arrangement attracted the attention of hundreds of housewives, sold several motors, and secured the names of many prospective buyers, not only for the motor, but also for many other appliances.

The Electrical Appliance Store in Sacramento turned the experience of a salesman into a novel window display.



Attracting attention to a sewing machine motor in front of the Renard-Stary Electric Shop in Los Angeles. Note the convenience outlet placed directly in the sidewalk in front of the door of the establishment.

He called upon a certain housewife with the idea of demonstrating a vacuum cleaner. But the housewife attempted to forestall him with the argument:

"No use trying that sweeper on my rugs. I've just been over all of them with a broom and they are clean."

The salesman saw a real opportunity to demonstrate his sweeper to advantage. He persuaded the lady to allow him to run the sweeper over one rug, first showing her that the bag was empty. After he had finished, he carried the sweeper to the back porch where he emptied a surprising amount of dust taken from the rug onto a newspaper. The housewife was sold.

Later the sweeper, a rug and the pile of dust on a paper were placed in the window of the store, with suitable window cards telling the story, yet mentioning no names.

Problems of Good Contractor-Dealer Advertising

The Relation Between Advertising and Merchandising and a Remedy Designed to Boost Electric Appliance Sales

By W. D. MORIARTY

Field Representative, Northwest Electrical Service League

The problem of advertising is one that must be faced by every business. Just because a man does not like to work over his advertising makes no difference except to make the problem harder. The fact that he feels his advertising has never paid him merely proves that he either has not found the right answer to his problem or did not know the right answer when he got it, or lacked the salesmanship to back it up.

Advertising is a vital part of merchandising, and any man whose success depends upon salesmanship must learn how to advertise. Professional men advertise in one way and business men in another, and one of the shortcomings of the contractor-dealer has been his assumption that he could advertise effectively by personal acquaintance and the spoken testimony of those he has served. These are all very well in their way, but they are, if used alone, too slow for business.

Who Are Competitors?

The essential earmark of a competitor is that he is a man who may get money which would otherwise be spent with you. This means that the druggist and the clothier are your competitors. When people are looking for a wedding gift the jeweler is your competitor. When they are considering building all the building trades are your competitors, and such effective competitors that the electrical work is seldom that percentage of the total cost it ought to be.

Every man who has anything to sell is the competitor of every other man who has anything to sell. The mere fact that the other contractor-dealers of a town do not advertise is no reason why you need not. Your possible customers have just so much money to spend. Some of it must be spent for necessities, and electricity is one of these necessities. This is why some electrical dealers get what little business they do get. People just must have certain electrical conveniences and they must buy them somewhere. But a very large percentage of what people buy is after all a matter of choice, and the real reason why the electrical business is not double what it is lies in the fact that the men in the business are not on the job making people want more electrical conveniences. If they want them badly enough they will get them even if they have to do without something else.

Of course much money is wasted in advertising. No one denies it. But no money is wasted in intelligent advertising. This is not written to persuade men to spend money in advertising but to get them thinking how they can spend it to advantage.

Money Wasting Advertisements

The curse of advertising in this business and most others is that it is not bought but sold. Someone comes around and sells you advertising space, but advertising space is not advertising. It becomes advertising only when you put

something in it which helps you sell goods. Moreover, when you think of advertising you should remember that you are a business man, not a doctor or a lawyer. It may be all right for a doctor to spend his money for a so-called "card" in a paper which reads:

"JOHN JONES, M.D.

General Practitioner

Specialist in Diseases of Children."

The ethics of his profession forbid his really going after business the way a business man does. But there is no excuse for you wasting money buying space to fill it up with

"JOHN SMITH

Everything Electrical

Sole Agent for the Hoorah Washing Machine."

You buy space intelligently only if you fill it intelligently.

Representative Advertising

Once bought, advertising space must be filled. Much good copy is sent out by manufacturers but unless the advertisement fits the dealer or the dealer is willing to build sales talks around the advertisement the real purpose of advertising is not fulfilled.

Any dealer who is a credit to the business knows for what his store stands, and he ought to be able to speak convincingly on the subject to old customers and to hoped-for customers. It may take some practice, but if he sincerely tries to tell his customers something which is really true and to their interest, he will find his task growing easier.

This does not mean that the dealer must himself write his own advertisements, but it does mean that they must be written by someone thoroughly in sympathy with the ideals of his store. It should be added also that it is manifestly foolish to spend ten dollars for space and not fifty cents' worth of intelligence in filling it. If a man were sending out five hundred copies of one letter he would surely have sense enough to spend some time in writing that letter, in fact, direct-mail advertising is one of the best forms of advertising the contractor-dealer can use, largely because he puts some intelligence into it, far more than he puts into an advertisement which will reach many times the number of people. And yet the advertisement should have more intelligence put into it for it reaches a man, so to speak, in the same envelope with the advertisements of all your competitors.

EDITOR'S NOTE

This is the first of a series of articles on advertising as applied to the contractor-dealer establishment and electric appliance shop to be written by Mr. Moriarty. The second article will appear in an early issue of the Journal of Electricity and Western Industry.

Activities of the West

A Business Man's Department Devoted to Events and Developments in Western Industrial Centers—Including News of Interest to Readers in Public Utility, Industrial and Trade Fields

Industry Building is Planned

Portland Architects Enlist Electricians in New Movement

The Portland chapter of the American Institute of Architects called a meeting on November 14 in the architects' hall which was attended by delegates from all branches of the building industry. The purpose of the meeting was to start a movement for the erection of a building which will house the various associations and organizations interested in the building industry in the city. After a thorough discussion a committee was appointed composed of the chairmen of the various organizations to formulate a definite plan of action.

It is hoped to have a building in which the headquarters and display rooms of the architects, electrical contractors and dealers, plumbers, heating contractors, general contractors, building material dealers, lumbermen, painting, plastering and bricklaying contractors may be maintained. Provision will also be made to accommodate the various engineering and technical organizations of the city. A large assembly hall for joint meetings, dances and entertainments, club rooms, a library and a gymnasium would be features of the building. A. E. McCoy, chairman of the first district of the Oregon Association of Electrical Contractors and Dealers, is the representative of this organization on the building committee.

Tacoma Loses Fight for Land for Power Project

The city of Tacoma recently lost its fight in the Superior Court of Pierce county to secure state land needed by the city to complete its holdings for the proposed 100,000-hp. Lake Cushman development, to supply power and light for the city needs. The land required is held for development of fish hatcheries, and the State Board of Fisheries has opposed the city's right to condemn the property involved, alleging that the north fork of the Skokomish, which is the property involved, is more valuable to the public for fish spawning than for developing electrical energy.

Judge G. S. Wright, of the Superior Court, handed down a decision to the effect that the land held for development of fish hatcheries can "no more be condemned than the state capitol building." The city of Tacoma has acquired virtually all of the remaining land needed for its power site development, after six months of condemnation proceedings in Mason county courts, and the opposition of the State Fisheries Board has come as a complete surprise. The city of Tacoma is now preparing its appeal from the decision of the Superior Court.

Suggest Electricity as Prison Guard

High tension wires strung along the walls of the Utah state prison as a means of preventing the escape of prisoners in the future has been suggested by the state board of corrections in their recommendations to the board of finance asking for funds to replace the antiquated wiring system of the prison with an up-to-date system. The plan calls for the stringing of wires carrying 2000 volts along the prison walls. The wires will be connected to an alarm system so that any attempt to cut them would set a series of gongs in operation.

Doherty Company Applies for Power Permit in Colorado

Indications that the Doherty interests are planning further developments in Colorado are contained in an application to the Federal Power Commission for a preliminary permit to build a dam on the Grand River, near Kremmling, Colo. The permit is asked for in the name of W. J. Barker, president of the Denver Gas and Electric Light Company, a Doherty corporation. The fact that Denver officials of the company deny all knowledge of the permit and state that the company has planned no development, is taken by local interests as an indication that the application came from the New York offices of the holding company.

The application shows that the proposed dam would be 230 feet high and would create a reservoir impounding 1,000,000 acre-feet of water. The power plant to be erected in conjunction with the dam would generate 65,000 horsepower.

Spokane Has Highly Successful Electrical Show

Added stimulation to the electrical industry in the Northwest, especially in the matter of bringing before the public the "Electrical Christmas" idea, was given by an Electric Show held in Tacoma from December 5 to 11. Sponsored by the Northwest Electrical Service League, with R. G. Emerson, field representative in charge, the show has been declared highly successful. A miniature electric home with each room completely furnished with the necessary appliances was one of the features of the show. The committee in charge of the display consisted of the following: H. T. Whitehouse of the Washington Electric Supply Co., C. V. Aspinwall of the Westinghouse Electric and Manufacturing Co., R. C. Steeple of the Doerr-Mitchell Co., W. J. Currie of the Washington Water Power Co., and H. C. Swann, city electrical inspector.

S. F. Manufactures Increase

Census Figures Show Large Increase in Value of Products

Power used by San Francisco manufacturing firms during the year 1919 increased 61.4 per cent over the amount used in 1914, according to figures just released by the United States Census Bureau in connection with the 1920 census. During 1919 a total of 99,748 primary horsepower was utilized in the plants.

Similarly the census figures show that the capital invested in manufacturing increased 124.1 per cent over the same five-year period with a total of \$326,398,000 invested in 1919. The value of the manufactured products increased 157.1 per cent.

In explaining the figures, the census report states that only plants operated under the so-called "factory system" were included in the data, while the number of establishments reported does not include the actual number of plants, but the individuals or corporations owning or operating such plants.

The figures for the year 1919, together with the percentage of increase over 1914, follow:

Number of establishments....	2,360	1.1
Persons engaged in manufactures	61,328	45.7
Proprietors and firm heads	2,451	16.4
Salaried employees	10,287	39.0
Wage earners	48,590	53.0
Primary horsepower	99,748	61.4
Capital	\$326,398,000	124.1
Services	78,621,000	122.2
Salaries	18,917,000	87.4
Wages	59,704,000	136.1
Materials	261,418,000	169.4
Value of products.....	417,321,000	157.0
Value added by manufacture (value of products less cost of materials).....	155,903,000	138.9

San Diego Company to Issue Monthly Publication

The San Diego Consolidated Gas and Electric Company has instituted a company magazine, to be known as "Glow," the first regular issue of which appeared December first. The purpose of the periodical is to present to the employees educational and entertaining articles regarding the business, social and sports activities throughout the company's organization. The December issue contains an article on the growth of the company since its organization, written by R. C. Cavell, superintendent of the record department and managing editor of the publication. The article points out that the company represents an outlay of \$14,500,000, has 701 employees and is San Diego's largest industrial development. The publication will be issued monthly.

Officials Declare for Federal Colorado Development

San Diego Conference Brings Out Government Plan when League of Southwest Sessions Fail to Reach Agreement

Following three days of papers and discussions on the possibilities of the Colorado River, both for irrigation and power development, and the various methods of financing and controlling such a development, the meeting of the League of the Southwest at Riverside, Cal., adjourned without expressing any sentiment on the question, either in the form of resolutions or a vote.

It was expected that the representatives of the seven states most vitally affected would express some definite opinion on the matter of developing the river before the formal hearing before the Federal Power Commission at San Diego which opened on December 12, but no action was taken.

Failure to pass resolutions is blamed on a spirited debate between state delegations as to how the vote should be taken. Representatives from Colorado, Utah, New Mexico, Arizona and Nevada held that the vote should be taken by states, each state having one vote. The California delegation, by far the largest, refused to sanction this procedure, holding out for a vote by membership. Attempts to bring about a compromise, both in the ranks of the California delegation and between the various states, failed and the meeting adjourned.

The question of the development of the vast water and power resources of the river were presented from every angle by experts well qualified to discuss the various problems. Private, municipal, state, interstate and national development were discussed.

Every problem attendant upon such a development was presented at some time during the three-day session, and the topics of the various papers and addresses ranged from flood control to financing.

Secretary of the Interior Albert Fall, representing President Harding, was one of the principal speakers. Secretary Fall stated that the government intended to iron out the difficulties between the various parties concerned as speedily as possible so that the vast acreage of undeveloped land may be placed at the disposal of the veterans of the World War.

R. T. Jeffery, chief engineer of the Hydroelectrical Power Commission of Ontario, perhaps aroused the greatest comment with his description of what that province has done in the way of public development and distribution of power. Representatives of each of the seven states presented the problems of their state regarding the projects which have been proposed. R. D. McPherrin of the Imperial Irrigation District, and one of the pioneers in the irrigation field, appealed for immediate development which would in some measure mitigate the dangers from flood which have cost millions of dollars in the past.

R. H. Ballard, vice-president of the Southern California Edison Company, told the gathering that his company stood ready to expend \$40,000,000 annually in the development of the power and irrigation resources of the river, while David T. Babcock, representing the Investment Bankers Association of

America, stated that his association stood ready to underwrite any private corporation or municipality which might be sanctioned by the Federal Power Commission to proceed with the project.

The sessions were presided over by Dr. R. B. von Klien Smid, president of the University of Arizona, and president-elect of the University of Southern California.

O. C. Merrill, executive secretary of the Federal Power Commission, in his address on "Power and the Colorado River," gave a clear and concise review of the present situation together with the various possibilities for power development which the river affords. He said in part:

"In its length of 1700 miles the Colorado extends from the permanent snowfields of the Rocky Mountains to the sub-tropical lands of the Imperial Valley. Within its basin are five million acres of irrigable land. The volume of its waters is exceeded only by the Sacramento, the Columbia, and the Mississippi. Along its course it would be possible to develop more than 6,000,000 water horsepower—two-thirds as much as is developed in the entire United States today. The problems of the Colorado affect seven of the states of the United States and two of the states of Mexico. All of these states are vitally interested in the distribution of its waters for irrigation and in the utilization of its potential water powers, while many millions of dollars of property values in both upper and lower California are periodically menaced by its floods.

Government Offers Colorado Plan at San Diego

Included in the plan for the immediate development of the Colorado River as outlined by Secretary of the Interior Fall and Arthur P. Davis, director of the U. S. Reclamation Service, at the San Diego hearing are the following:

That the government immediately construct a dam at the Boulder Canyon site for the primary purpose of flood control, with irrigation the second consideration and power generation last.

That the cost of the construction of this dam with interest be repaid in full to the government by the sale of power.

That power, irrigation and other benefits be allocated by a board composed of one irrigation engineer, one irrigation lawyer and one power engineer, all to be chosen from a district outside the interested area.

The above plan received the unanimous support of all of the four hundred or more officials and others who attended the hearing with the exception of the representatives of the Southern California Edison Company, the Southern Sierras Power Company and the states in the upper Colorado basin. The latter asked assurance that their rights would not be jeopardized by the construction of such a dam, prior to the use of water farther up the stream.

The power company representatives, speaking through R. H. Ballard, vice-president and general manager of the Southern California Edison Company, declared that in their applications for a license they recognized the prior right of flood control and irrigation, that they were agreeable to the proposition that the license when issued, specifically state that no preferential rights be conferred which might operate against the upper basin, and that they recognize the principle that the state in which the power is generated be given first rights to its use. Mr. Ballard also declared that the Edison company was ready to issue bonds to cover two-thirds of the cost and stock to cover one-third and was ready to proceed with the work to the extent of thirty or forty millions of dollars annually.

"A discussion of the general problems of the Colorado may best be undertaken if we first consider the river in three sections, and then the relation of these sections to each other. The upper section from the headwaters to the mouth of the San Juan comprises about 40 per cent of the area of the basin and affords about 87 per cent of the total runoff, or an average of 15,000,000 acre-feet per annum. In this section are some 2,500,000 acres of irrigable land, one-half of the total in the basin. It also has power possibilities aggregating 2,000,000 horsepower. In this section, both upon the main stream and upon its tributaries, are many favorable reservoir sites by means of which it would be practicable to regulate the flow of the streams for irrigation within the section, for power development both within the section and outside, and, if desirable, for flood control on the lower river.

"The middle section from the mouth of the San Juan to the mouth of the Williams comprises about 35 per cent of the area of the basin and supplies about 7 per cent of the annual runoff. There are no irrigable lands along the river in this section and only 250,000 acres on the tributaries, none of which can be reached from the main river. In this section, however, there is a total drop of some 3,000 feet, capable, if fully utilizing the average annual runoff entering the section, of producing 4,000,000 horsepower. Except for the Boulder Canyon site near the lower end of the section there appear to be no feasible storage sites. Dams erected for power development would be primarily for the purpose of concentrating the head and of providing daily load regulation. Seasonal regulation would be dependent upon storage in the upper section.

"The lower section from the mouth of the Williams River to the Gulf and including the drainage of the Gila and the Imperial and Coachella valleys in California, comprises some 25 per cent of the total area of the basin and furnishes about 6 per cent of the average annual runoff. Its power possibilities are relatively unimportant, but it contains some 2,250,000 acres of irrigable land, the most fertile and most valuable in the basin, a large part of which is periodically endangered by floods.

"Viewed solely from the physical standpoint, the upper section of the basin might have its primary development directed either toward irrigation or toward water power. On the other hand, the middle section, with the exception of storage below the mouth of the Virgin and of relatively small irrigable areas on the tributaries, is suitable only for power development. Equally clearly the lower section should be devoted primarily if not exclusively to irrigation."

Several resolutions had been prepared by the special committee appointed for that purpose and had been passed and were ready for presentation to the general meeting when that body adjourned. Included in these resolutions were the following:

"Resolved, Pending the decision of the Interstate Compact Commission, that in all licenses or permits issued by the Federal government to authorize the construction or maintenance of dams, ditches, reservoirs or other physical works upon the public domain, there should be a provision whereby the holder agrees that the use of water in connection therewith, from an inter-state stream, shall be subject to the right of each other state upon such stream to an equitable division or portion of such water for itself or its people, whether water uses in other states have been made already or made thereafter; and that where the Federal government itself undertakes water projects taking water from such a stream, there should be in the statutes and regulations appropriating money therefor and authorizing the project and in all water contracts made in respect thereto, a similar provision; and that where water projects exist in one state upon an inter-state stream, whether they be projects of the Federal government or not, the Federal government should not on the ground of interference with the water system of such projects hold up projects in other states by refusing to grant rights of way therefor upon the public domain.

"Be It Resolved, That we earnestly recommend the immediate and comprehensive development of the entire Colorado River basin, with due regard to the necessities for prompt flood control, to the end that millions of dollars of present property investments may be safeguarded; millions of arid acres of land shall be reclaimed and brought into productivity for the benefit of the entire nation; and full development of hydroelectric power may be obtained for the upbuilding of the varied industries of the several states."

Link River Dam Turned Over to Government by Builders

The Link River Dam, built to regulate the flow of water between Upper and Lower Klamath lakes, was recently completed and turned over to the United States government. The dam was constructed by the California Oregon Power Company under contract with the United States government through the Reclamation Service of the Department of the Interior, and is a part of the government's plan for the full development of the Klamath irrigation project and the full utilization of the Klamath watershed. From the company's point of view the dam may be used to create a steady flow down the Klamath River and thus prevent the waste of water which hitherto has always occurred during the high-water season.

As is widely known, physical difficulties were not the only problem that confronted the builders of this invaluable asset to the region. Through a misunderstanding of the contract, considerable opposition to the contemplated work arose locally, and halted the work in 1920. But after a thorough investigation on the part of the Chamber of Commerce of Klamath county, and the Department of the Interior in Washington, and after a supplemental contract had been entered into doing away with the previous objections, activities were resumed in May of this year.

Credit for the final completion of this engineering accomplishment belongs jointly to the local Copco organization and to the members of the contracting firm of Duncanson and Harrelson. The construction work, most of which was done during the past summer, was superintended by William Harrelson, his brother, D. O. Harrelson, Jr., and their superintendent, Victor Storm.

Until the construction of this dam, the flow of the Link River, at the outlet of Upper Klamath Lake, was controlled by two natural weirs or reefs. Briefly, the work of the company was to remove a portion of each of these reefs and construct a dam with a variable crest. The dam is located below the second reef at the head of the Keno Canal and just above the natural rapids in the Link River from which the city of Klamath Falls derives its name.

The Link River dam, which is in reality a series of piers raised on a foundation of tight bedrock seven feet below the natural stream bed, is a structure of reinforced concrete and measures 435 feet between abutments with an average height of twenty feet. The dam diverts water for the irrigation of large tracts of land which will comprise a federal land settlement.

INDEX READY

The index for Volume 47, June to December, 1921, is now on the press. It will be sent upon request to any subscriber free of charge.

Wireless Telephone Astounds People of China

The marvels of the wireless telephone have taken the Orient by storm, according to Professor C. H. Robertson, American lecturer, who has been demonstrating the latest developments of electricity throughout China and Japan during the past six months. On the first day that he puzzled the Celestials of Shanghai by carrying on an intelligible conversation with some mysterious individual in empty space, it was estimated that more than 14,700 natives came to witness the performance. Before he had left the city his lectures on the wireless 'phone had been attended by an aggregate of at least 300,000 people.

Professor Robertson, who is being aided in his work by the China Electric Company, an allied company of the International Western Electric Company of New York, found that the easiest way of interesting the Asiatics was to take his wireless telephone station through the streets of the crowded cities on a big Chinese wheelbarrow. Every now and then he halted and carried on a wireless talk with his associates who had set up another station in their quarters.

Protest Moving Water Rights Office from S. F.

Several San Francisco organizations, including the local section of the American Society of Civil Engineers and the Electrical Development League, have protested to Governor William D. Stephens against the removal from San Francisco of the division of water rights of the State Department of Public Works. The move has resulted in the deposition of Charles H. Lee in charge of the office by A. B. Fletcher, head of the department, and the appointment of Paul Bailey to succeed him. Mr. Bailey was formerly in charge of the water resources investigation and has held various appointments in the Department of Public Works.

The California Oregon Power Company, which operates in northern California and southern Oregon, will move its main offices from San Francisco to Medford, Oregon, on December 21. The company has a large hydroelectric plant at Klamath Falls.

Plans for Skagit River Power Machinery Approved

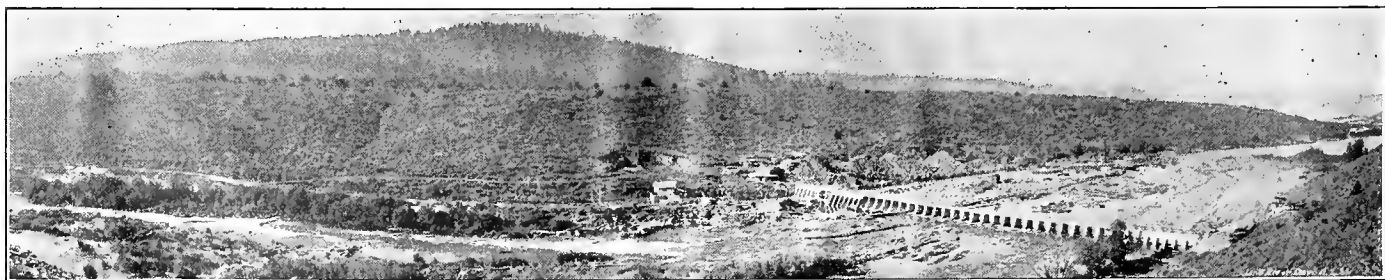
Drawings of the hydroelectric machinery to be furnished the city of Seattle for use in the main power house on the Skagit River development project were recently received and found satisfactory by C. F. Uhden, hydroelectric engineer in charge of the Skagit work for the city of Seattle. The drawings were submitted by the Westinghouse Electric & Manufacturing Company, and covered two Westinghouse generators of 30,000 kva. capacity each, and six transformers of 10,000 kva. each.

The S. Morgan Smith Company of York, Pa., submitted plans for two huge hydroelectric turbines. In addition to the turbines, the Smith Company will also furnish the three big hydraulic valves, 10 ft. in diameter, which will be required. The machinery covered in the drawings will cost the city approximately \$1,000,000. Delivery will begin in January, 1923, and is to be completed in May, 1923, or sooner if construction work on the Gorge Creek power house has reached a point that will warrant quicker delivery.

Alaska Pulpwood Tract Placed on Market by U. S.

Two billion feet of Alaska pulpwood, the largest amount of National Forest timber ever offered for sale, has been placed on the market by the Forest Service. The timber is within the Tongass National Forest on Admiralty Island and comprises 90,000 acres with a frontage on navigable water of 48 miles. Four-fifths of the timber is Western hemlock and the remainder Sitka spruce, both of which make an excellent grade of paper. The sale period has been set at thirty years and the sales contract calls for the erection of a pulp manufacturing plant with a capacity of 100 tons daily, to be established in Alaska within three years after the purchase of the timber. The prospectus describing the land states that there are many unappropriated power sites adjacent to the tract of timber, suitable for developing sufficient power for a large pulp and paper mill. Recent surveys show that sufficient timber is available in the far northern territory to supply one-third of the present newsprint requirements.

Engineers of the Department of Public Works at Olympia are carrying on an investigation for the department of conservation and development to determine the possibilities of development of electrical power in connection with the White-Bluffs-Hanford Soldier Land Settlement project.



The Link River Dam between Upper and Lower Klamath Lakes, built by the California Oregon Power Company for the U. S. Reclamation Service.

Tacoma Church Has Electrical Heating System Installed

The new Holy Rosary Church just dedicated in Tacoma, Washington, has an unusual adaptation of electric heat. The building cost \$200,000, and has a seating capacity of about 900. While the building is not entirely completed, the new heating system gave satisfactory service on the day of the dedication, under adverse conditions.

The plant consists of one main steam generator,—a steam drum, connected with which are three 26.8-kw. improved electric steam units. These units are designed for 220-240-volt circuit. This generator has an evaporation capacity of about 32 gallons of water per hour. The heat is distributed through mains running beneath the floor, which feed a loop of steam coils under each pew, giving an even distribution of heat to the 310,000 cubic feet of air in the building.

Another feature of this system is that it is designed to heat the two school buildings connected with the church, using the same units, as the school buildings seldom if ever need the heat at the same time as the church building.

According to A. J. Holmes, the inventor of the system, the cost of operation is approximately forty cents per hour for the entire unit. Tacoma's power rate is but half a cent per kw-hr.

Work on Pit River Project of P. G. & E. Progressing

Progress on the Pit River development of the Pacific Gas and Electric Company indicates that the project will be completed at approximately the date set when the undertaking was proposed, according to reports from officials of the company. A progress report for the entire work up to the middle of the month of November shows that the project stood thus:

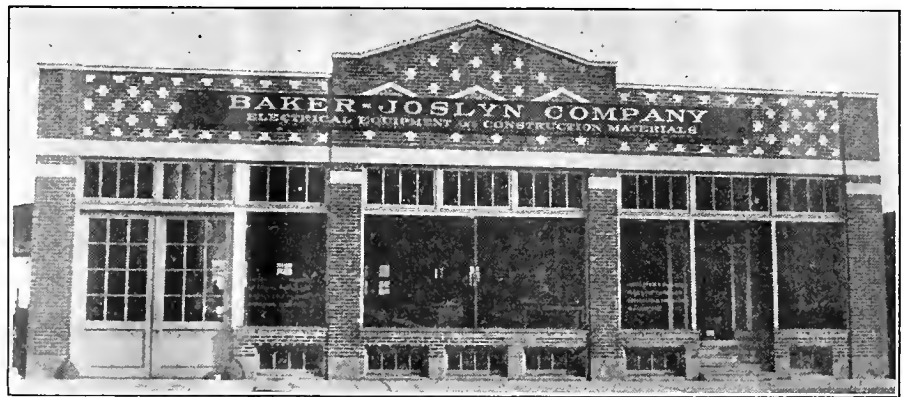
Two power plants on Hat Creek completed and in operation, each of 16,500-horsepower capacity.

Pit River No. 1 development in active process of construction, with the excavation for the diversion dam on Fall River half completed, the 1200-ft. canal from intake to tunnel mouth 85 per cent dug, the 10,180-ft. tunnel that will carry the water from Fall River Valley to the canyon of the pit 86 per cent driven.

The foundation for Pit No. 1 power house poured and the 1200-ft. tail race from power house to the river 75 per cent excavated.

The pole line from Hat Creek to Cottonwood, distance about 60 miles, completed. Forty miles of the double-circuit steel tower transmission line from Cottonwood to the company's new sub-station in process of construction near Vacaville and the tower foundations laid for the balance of the distance.

A \$5,000,000 steel plant and rolling mills is to be located at San Diego, Cal., if plans proposed by A. P. Gilles, San Francisco industrial engineer, mature. Mr. Gilles has secured a large deposit of iron ore near San Diego and plans to erect a mill having a capacity of 200 tons daily. It is estimated that the plant will require 25,000 horsepower for its operation.



The new home of the Baker-Joslyn Company in Seattle provides 18,000 square feet of floor space for handling the large stock of transmission line material and other electrical equipment which the company handles, as well as presenting an imposing appearance from the exterior.

Baker-Joslyn Company Purchases Seattle Headquarters

The Baker-Joslyn Company, jobbers of Seattle, San Francisco and Los Angeles, has purchased the office and warehouse building of the Northwest Trading Company at 2424 First Avenue, Seattle, which will be used as the Northwest distributing headquarters.

The building is 60 by 150 feet, with one floor and basement and 18,000 square feet of floor space. Spacious offices occupy the front of the ground floor while the remainder has been especially constructed for warehouse use. The 20-ft. clearance on the main floor provides for the future construction of a mezzanine floor which will

add 5000 square feet of floor space to the present capacity.

The Seattle branch was established seven years ago and for the past six years has been under the management of H. H. Manny. The company is the Pacific Coast distributing agency for pole line construction materials and electrical equipment of the Joslyn Manufacturing and Supply Company of Chicago, and other construction material manufacturers.

The Baker-Joslyn Company is the second large electrical supply house to purchase a permanent home in Seattle, the Westinghouse Electric and Manufacturing Company having recently bought the plant of the Kilbourne-Clark Company.

Western Reclamation Interests Meet in Salt Lake

Governors of Thirteen States Send Message to President Harding Endorsing Reclamation of Waste Areas of the West

The convention of the Western States Reclamation Association was held at Salt Lake City, Utah, November 29 and 30. Delegates were in attendance from Idaho, Arizona, New Mexico, Utah, Nevada, California, Oregon, Washington, Colorado, Wyoming, Nebraska, Montana and Texas. Among the delegates present were governors of several of the western states, including the following: Governor D. W. Davis of Idaho, Governor Chas. E. Mabey of Utah, Governor Thomas E. Campbell of Arizona, Governor M. C. Meecham of New Mexico, and Governor Dixon of Montana.

Governor D. W. Davis, president of the association, in speaking before the convention, declared that the West should grasp the opportunity to capitalize the unemployment situation by pushing reclamation plans that will provide homes for former service men and work for the army of unemployed. Governor Davis referred to the Smith-McNary bill, and declared his belief that the cause of reclamation is ably supported in Congress, and that the Smith-McNary bill is strongly constructed.

At the second day's session Governor D. W. Davis of Idaho was unanimously selected as head of the association, succeeding himself. Apostle George Albert Smith of Utah was named as vice-president, succeeding W. W. McDowell,

formerly lieutenant-governor of Montana. A vote of appreciation of the active work of Frank W. Brown as secretary of the association virtually directed the retention of Mr. Brown in that office. W. W. Armstrong of Utah was selected as treasurer of the association.

Executive committee members include the governors of each state, ex officio, and the following:

Utah, W. R. Wallace; California, W. A. Beard; Oregon, Whitney L. Boise; Washington, D. A. Scott; Idaho, R. A. Shepherd; Nevada, to be filled in later; Arizona, P. D. Overfield; New Mexico, F. G. Tracey; Colorado, F. L. Lucas; Wyoming, F. C. Emerson; Montana, W. T. Cowan; Nebraska, J. L. Whitehead; Texas, C. H. Pease.

The association endorsed the principles of the Smith-McNary bill, and sent the following telegram to President Harding:

"The Western States Reclamation Association, representing thirteen western states assembled at the call of the governors of such states, declare it the part of wise statesmanship and far-seeing economic policy that the development of the waste lands by irrigation and drainage be undertaken by the federal government.

"Reclamation of 20,000,000 available acres of irrigable land in the West is desirable if this great empire is to take its rightful place in the nation as an economic and social factor in the program of reconstruction now before the nation.

"We respectfully request that you renew your endorsement of the cause of reclamation by including in your message to the Congress of the United States a recommendation that a broad national program of development be undertaken."

Western Cooperative Campaigns Feature Christmas

Three western cooperative campaigns are waging vigorous drives to bring home to the people the advisability of purchasing electrical gifts for Christmas. In California, the cooperative campaign besides emphasizing electrical week from December 5 to 10, have arranged a contest with the San Francisco Bulletin, while the Rocky Mountain League sponsored a special electrical section in the Salt Lake Telegram. The Denver League is conducting a special cooperative advertising campaign in addition to the regular electrical week.

The California League, through the San Francisco Bulletin, is conducting an essay prize on "Why Electricity is the Modern Servant in the American Household." Electrical prizes ranging from ten small flashlights to a range or washing machine have been donated by the contractor-dealers. The essays will be judged and prizes awarded shortly after Christmas.

In Salt Lake the league is fostering a contest in which prizes are awarded to people who present the greatest number of sale tags from stores which are members of the league. Twelve prizes are offered in this contest while three additional prizes are offered to the person presenting the largest single sales tag representing a purchase during the Christmas shopping period. Salt Lake has also followed the lead of Denver in issuing an attractive gift certificate.

During Electrical Week in Denver nearly every retail electrical dealer in the city arranged special window and floor displays in their stores. Novel effects were obtained through seasonable color schemes, and special "stunts" accompanying the demonstration of various appliances attracted unusual attention.

Newspaper advertising in the cooperative campaign now being carried on started the "Electrical Christmas" story about December 1st and during Electrical Week the League's Christmas poster was reproduced in every paper every day. A number of the jobbers and dealers used "tie-in" copy to advantage, it is reported.

The gift certificate idea was loudly acclaimed by the entire industry and although only the retail dealers are issuing them, the other members are backing the proposition to the limit. The League, through its advertising agency, prepared an attractive certificate in two colors, with window streamers accompanying it, the use of which thus far is believed by the League officers to indicate unusual effectiveness as a sales aid.

Electrical Association Formed in Victoria, B. C.

Under the auspices of the Electrical Service League of British Columbia, the electrical industry of Victoria, B. C., has organized the Victoria, B. C., Electrical Association. The organization was completed Nov. 24, 1921, when the various representatives of the central stations, the manufacturers and jobbers and the contractor-dealers met in the offices of the B. C. Electric Railway Company, Ltd.

In the constitution which was adopted the following are set down as objects of the organization:—

(a) To develop the electrical industry by educational methods, encouraging the practice of good ethical business methods and of improved service to the public.

(b) To develop a closer cooperation and understanding between central stations, contractor-dealers, manufacturers and jobbers to the end that the efficiency of the various branches of the industry serving the public may be increased and that the customer may obtain better electrical service.

(c) To help the contractor-dealers improve their business methods, including accounting, sales advertising and general store appearance, thereby elevating the plane of the retail branch of the industry.

(d) To form a recognized body to promote electrical development to support each branch of the industry when occasion requires and obtain fair treatment for invested capital on the part of the authorities by working for a fair attitude towards electrical development on the part of the public at large.

The following officers were elected for the ensuing year:

A. T. Goward, manager, B. C. Electric Railway Co., Ltd., honorary president.

S. J. Halls, sales engineer, B. C. Electric Railway Co., Ltd., president.

R. T. Murphy, Murphy Electric Co., vice-president.

H. G. Miller, Canadian General Electric Co., secretary-treasurer.

E. C. Hayward, Hawkins & Hayward, and F. G. Fox, Fox & Mainwaring, auditors.

The first work of the Association is to be the promotion of the electrical appliance idea for Christmas gifts. Following out the Christmas plans of the Electrical Service League of British Columbia, the Victoria Association has adopted the slogan "Say Merry Christmas Electrically." Cards showing the cost of operation of appliances, based on the rates obtaining in Victoria, are being displayed for the first two weeks in December. This educational campaign is to be followed by a week of cooperative advertising in the local papers, which united effort should sell the electrical idea to the Christmas trade and at the same time knit together the various branches of the industry in Victoria.

Later the Association plans an Industrial Lighting Exhibit and an "Electrical Home" in Victoria, for the education of the public to better lighting, and better electrical installations for the home.

Colorado Steel Mills to Reopen on Large Scale

Possibility that the steel mills of the Colorado Fuel and Iron Company at Pueblo would re-open with nearly a full force in the near future has been indicated by Superintendent Getchell of the Walsen coal mine, operated by the company. Getchell declared December 1st found the largest force of diggers in the company's mines in southern Colorado since the start of the strike against a reduction of wages. More than one thousand miners were at work in mines affected by the strike in the Las Animas and Huerfano county districts, Mr. Getchell said, and under reduced wages coal can be laid down at the mines approximately \$1 a ton cheaper. Much of the coal from the southern mines is used at the company's steel plant.

"This means that steel can be produced about \$4 a ton cheaper and the company should be able to go and get some business," he said.

Books and Bulletins

The Coffin Valve Company, Boston, has issued a booklet describing the Coffin balanced needle valve, one of the latest engineering devices to be perfected by the company. The valve is balanced and has a positive motion and is particularly adapted to control the flow of water at the point of entrance to a closed pipe line or for free discharge.

Donald Bruce, associate professor of forestry of the University of California, has prepared a new volume table for determining the lumber content of white fir trees. Hitherto considered of practically no value, the trees are now being used extensively for rough construction and this is the first volume table covering the species to be issued. It may be had free of charge by applying to the College of Agriculture of the University of California for Bulletin No. 329.

Weber Wiring Devices are described and quoted at length in a new catalog which has been issued by Henry D. Sears, Boston, general sales agent for the Weber line. The first catalog to be issued in twelve years, the publication is one of the most complete in the field. No detail is omitted even to specifying which devices concur with the National Electrical Code Standard.

The Trumbull Vanderpool Electric Manufacturing Co., Bantam, Conn., has issued Bulletin Eleven covering the safety switches manufactured as a part of its line. The catalog is most complete and contains in addition to regular descriptive material and quotations line drawings and dimensional tables of the various types of switches.

Intermountain Mining Industry Staging Comeback

The metal mining industry of the Rocky Mountain region is staging a rapid comeback, according to recent reports of the American Smelting and Refining Company. Smelter earnings are said to be showing a big increase and with the cessation of operating losses, the regular dividends will be earned.

Considerable new construction is being planned and authorization has already been given to the installation of a new mill at the Yak mines near Leadville, Colo. A concentration plant to handle all ores below the smelting grade will also be built shortly, it is understood.

Reports from the Telluride and Clear Creek districts of Colorado indicate activity while at Cripple Creek several of the producing properties are now showing up better than at any time during the present year.

A bill has been introduced in the Denver city council to regulate charges for steam heat. It is said that the bill is directed against the Denver Gas and Electric Light Company, which furnishes steam heat to many stores and buildings, because the license under which this service is provided expired several months ago.

Meetings of Interest to Western Men

Portland Contractor-Dealers Entertain Architects

A movement to bring about closer cooperation and a more friendly relationship between the contractor-dealers and the architects of Portland was launched November 30, when the Portland members of the Oregon Association of Electrical Contractor-Dealers entertained as their guests the members of the Oregon

The fundamentals and theory of business economics was presented in a most interesting manner by Stephen I. Miller, Jr., secretary-manager of the Northwest Electrical Service League and dean of the College of Business Administration of the University of Washington. W. G. Purcell, president of the Oregon chapter, American Institute of Architects, on behalf of the architects



Cooperation between architects and electricians was urged at a banquet tendered the Oregon section of the American Institute of Architects by the Oregon Electrical Contractor-Dealers' Association at the Portland Chamber of Commerce on November 30.

Chapter of the American Institute of Architects at a banquet at the Chamber of Commerce.

Toastmaster J. R. Tomlinson, treasurer of the contractor-dealers, introduced J. H. Shroufe, president of the Oregon Association of Electrical Contractors and Dealers, who explained the purpose of the meeting and told something of the work of the Northwest Electrical Service League along cooperative lines, pointing out the benefits that would accrue to the members of the two organizations represented by closer cooperation.

present, thanked the electrical men for the banquet and assured them that the architects were ever ready to cooperate with them. Short speeches were made by O. B. Coldwell, vice-president of the Portland Railway, Light & Power Company, and A. E. McCoy, chairman of the first district, Oregon Association of Electrical Contractors and Dealers.

The program of the evening was concluded by the presentation of a paper on Light and Illumination, by F. H. Murphy, illuminating engineer of the Portland Railway, Light & Power Company.

Vancouver Contractor-Dealers' Association Active

Active membership in the Vancouver Association of Electrical Contractors and Dealers has increased 60 per cent in the four months ending November 30, 1921, the revival of interest being due to the activities of the Electrical Service League of British Columbia in the trade, in the city of Vancouver and the adjacent municipalities.

At the present time the association is actively engaged in assisting the Service League in the furthering of two campaigns for "Better Business," namely, the cooperative advertising campaign to promote the sale of electrical appliances as Christmas gifts and the Industrial Lighting Exhibit.

Recently an election of officers was held for the year ending November 1, 1922, and the following officers were elected:

President, C. C. Carter, Carter Electric Company; secretary-treasurer, P. F. Letts, Letts Electric Company. Executive Committee—Sidney Darnborough, Mundy, Rowland & Co.; S. E. Jarvis, Jarvis Electric Company; J. C. Reston. Ex-officio—W. W. Fraser, retiring president; C. C. Carter, P. F. Letts. Members of the Advisory Council, Electrical Service League of British Columbia—C. C. Carter, W. W. Fraser and E. Brettel.

The association voted to remain as affiliated with the National Association of Electrical Contractors and Dealers instead of joining forces with the contractor-dealer associations of the Pacific Coast states.

Electric Day Marked by Special Programs in S. F. and L. A.

Special programs at the meetings of the San Francisco Electrical Development League and the Los Angeles Electric Club characterized the observance of Electrical Day, December 5. In both places "The Maid of the Mist" was called forth and special efforts were made to make the day a notable one.

In San Francisco, following the meeting, the membership of the league adjourned to the California Industries Exposition. R. H. Ballard, vice-president and general manager of the Southern California Edison Company, speaking before the San Francisco body on "Electric Power Development and Its Relation to Industry," showed wherein municipal development of power failed by citing the case of the city of Los Angeles, and the province of Ontario, Canada. In Canada, he declared, rates were such that they practically eliminated the farmer, who is one of the largest users of power in the West. Only one per cent of the power generated by the Ontario system is furnished to the agricultural industry while the rates charged are double those charged to other industries. Regarding Los Angeles, he said:

"Promises that the proposed California experiment will be absolutely self-sustaining, without any charge upon the taxpayer, and that costs of service will be low, are freely made. Exactly the same character of promises were made in the inception of the Los Angeles municipal power plan. Under date of December 1, 1912, the Los Angeles voters were officially promised that 120,000 horsepower would be developed along the aqueduct, at a total expenditure of \$7,200,000, but the annual report of the Municipal Power Bureau, June 30, 1921, shows an investment of \$10,717,000, with only 72,000 horsepower developed. The continuance of development at this cost, of the remainder of the 120,000 horsepower, would require a total expenditure of \$18,000,000."

Welding Society Forms Sections in Pacific Coast Cities

Five sections of the American Welding Society are in the process of formation on the Pacific Coast as the result of a visit to the West by C. A. McCune, vice-president of the organization. Seattle, Portland, Spokane, San Francisco and Los Angeles are the western cities to which the national organization has spread its activities. During past years there has been considerable agitation for the organization of the branches of the society on the Pacific Coast and, according to Mr. McCune, in each of the five cities the preliminary plans met with a hearty response. It is expected that all of the sections will have effected permanent organization shortly after the first of the new year. Such an organization will be perfected in San Francisco at a meeting to be held January 13.

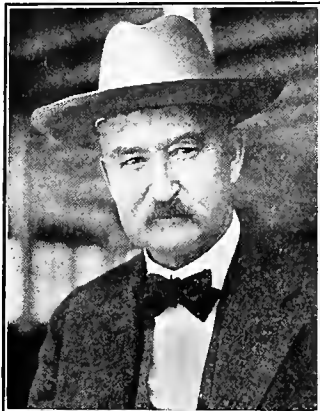
The seventeenth annual convention of the Western Association of Electrical Inspectors will be held at the Hotel Sherman in Chicago on January 17, 18 and 19, 1922.

Good will advertising is being emphasized by the Montana Power Company in Butte, which is conducting an extensive campaign throughout the state in which they are offering \$500 in prizes for a trade mark.

COMING EVENTS

- AMERICAN ASSOCIATION OF ENGINEERS
Annual Convention—Salt Lake City—June 4, 5 and 6, 1922
- WESTERN ASSOCIATION OF ELECTRICAL INSPECTORS
Annual Meeting—Chicago—January 17, 18, 19, 1922
- AMERICAN SOCIETY OF ELECTRICAL ENGINEERS
Pacific Coast Convention—Vancouver, B. C.—August 8-11, 1922

Albert B. Fall, Secretary of the Interior, delivered President Harding's message to the League of the Southwest at Riverside last week and later conducted the government hearing on the Colorado River projects at San Diego. Interested in the development of power in National Forests and on the public domain, Secretary Fall was one of the most active government officials at the momentous hearings. A member of the Federal Power Commission, the body which will ultimately de-



A. B. FALL

cide to whom a license for the development of the river will be issued, he was highly interested in the data presented before the sessions, both from a personal and official standpoint. Secretary Fall was a former senator from New Mexico. He is a farmer, stock raiser and mining man of Three Rivers, N. M., and as such is the possessor of a large amount of first hand information on the need for flood control and the possibilities for both irrigation and power from the development of one of America's sources of potential power.

H. G. Weeks, one of the oldest employees of the California Railroad Commission, has been named chief of the transportation department of the engineering division of the commission, the newest adjunct to that body's activities. Mr. Weeks, whose long experience well qualifies him for his new post, will be under the direct supervision of Richard Sachse, chief engineer of the commission.

Arthur B. Wollaber, district manager for the Southern California Edison Company at Pasadena, is highly optimistic regarding general business conditions as the result of a trip through the eastern states inspecting various electrical plants.

H. Y. Carson, research engineer for the American Cast Iron and Pipe Company, Birmingham, Alabama, recounted some interesting experiences in connection with sanitation in Palestine, when he spoke at the San Francisco Engineers' Club under the auspices of the A. S. M. E.

W. Carrick Wedderspoon of the firm of Carrick Wedderspoon and Company, Ltd., an electrical supply house of Christchurch, New Zealand, is a recent San Francisco visitor. Mr. Wedderspoon was en route to New York in the interests of his company, and while in California inspected some of the recent hydroelectric developments.

Personals

K. E. Van Kuran and E. A. Hopkins of Los Angeles, L. M. Cargo of Denver, W. B. McDonald of Seattle and W. H. Whiteside of Pasadena have been spending several days in San Francisco attending conferences of the western branch managers of the Westinghouse Electric and Manufacturing Company.

Ikutaro Inouye, electrical engineer for the Japanese Government Railways, is studying hydroelectric development and electrification problems in the West before going to Schenectady to consult with General Electric Company engineers regarding contemplated improvements to the Nipponese railways.

Gilbert N. Lewis, professor of chemistry at the University of California, and E. C. Franklin of Stanford University are the two outstanding western men who have been suggested as candidates for the presidency of the American Chemical Society. It will be remembered that Professor Lewis was the winner of the Gilbert medal for 1920 as well as the possessor of an enviable war record.

J. A. Cranston, Northwest manager for the General Electric Company with headquarters in Portland, is a recent San Francisco visitor, where he conferred with officials of the company.

W. A. W. Bundock, an electrical engineer of the Department of Public Works, Sydney, Australia, recently arrived in San Francisco on the S.S. Tahiti. Mr. Bundock is making an exhaustive study of hydroelectric development, transmission and substation equipment. His itinerary will include a tour of the United States and England.

Superior Judge E. P. Shortall of San Francisco demonstrated his desire to thoroughly understand the case in question, when he adjourned court for two days in order that he might visit the Potter Dam on the Eel River in Mendocino county. The dam was the subject of litigation in the San Francisco superior courts.

William E. Watson, J. L. Roberts and A. W. Dull, engineers from the Schenectady plant of the General Electric Company, were guests aboard the United States battleship California, on that vessel's trial trip in Pacific Coast waters recently. The California was built at the Mare Island yards on San Francisco Bay, and is electrically operated throughout. The trials, according to the engineers, were highly successful, and fully demonstrate the practicability of electrically operated fighting craft.

M. L. Sindeband, electrical engineer for the American Gas and Electric Company of New York City, has been in California conferring with officials of the Pacific Gas and Electric Company and the Great Western Power Company on problems of high tension transmission lines. According to Mr. Sindeband, his company is contemplating following the example set by western companies, and erecting a 220,000-volt transmission line in the near future. Following conferences in San Francisco, the engineer proceeded to

Los Angeles where he met with engineers of the Southern California Edison Company for a discussion of the same problems.

William Gerig, assistant chief engineer of the Alaska Engineering Commission, has retired according to official reports at Seattle. One of the pioneers in the construction of the Alaska government railroad, Mr. Gerig joined the commission in 1917 as consulting engineer in charge of harbor and pier construction in the far northern territory and was later in charge of the Anchorage Division. In 1919 he was appointed to his present post.

Frank Boyd, San Francisco manager of the small motors department of the General Electric Company, recently returned from a month's visit to eastern manufacturing centers. He reports that many of the factories which have been practically closed during the business depression have reopened as the result of foreign orders.

C. A. McCune, engineer for the Page Steel and Wire Company and vice-president of the American Welding Society, has been on the Pacific Coast for the purpose of organizing sections of the society for the promotion of welding in the West. Under his direction preliminary steps in the formation of chapters were taken in Seattle, Spokane, Portland, San Francisco and Los Angeles.

Robert L. Eltringham, executive secretary of the California Electrical Co-operative Campaign, presided over the recent Electrical Day luncheon of the San Francisco Electrical Development League which inaugurated the seven days of intensive activity from December 5th to 12th, known as Electrical Week. This institution was started this year by the Co-operative Campaign as the most effective method of publicity toward furthering the Christmas



R. L. ELTRINGHAM

electrical merchandising season. Feature meetings were held simultaneously by the Electric Clubs of Los Angeles and San Francisco, the day was celebrated as Electrical Day at the California Industries Show and special efforts were made to secure electrical displays by merchants in all parts of the state. Mr. Eltringham's careful plans and personal efforts were largely responsible for the success of the event, which it is hoped to make an annual affair.

Robert Sibley, editor of the Journal of Electricity and Western Industry, was re-elected to the vice-presidency of the American Society of Mechanical Engineers, at the annual meeting in New York City.

Herbert S. Sands of the Denver Westinghouse office has been appointed on the committee which will build the new cathedral for the Colorado Consistory of Scottish Rite Masons in that city.

F. F. McCammon of The Denver Gas and Electric Light Company has been appointed on the committee superintending the wiring of the first electrical home now being constructed in Denver by the Electrical Cooperative League.

R. B. Childs, superintendent of the Intermountain Power Company, which furnishes current to the lines of the Chicago, Milwaukee and St. Paul Railway for the operation of its electric trains, predicted the ultimate electrification of every major railroad in the West in a discussion of the subject before the Spokane section of the A. I. E. E. on December 2.

R. B. Clapp, of the firm of Clapp and LaMoree, Los Angeles manufacturers' representatives, is making an extended tour of the East where he expects to secure first hand information of new developments in the electrical industry which will be applicable to conditions in the West. His firm has recently been made Southern California representative for Stanley and Patterson, manufacturers of telephone apparatus, and hospital and fire alarm signals.

Bertram D. Dean, former member of the engineering staff of King County, Washington, has been appointed resident engineer for the \$430,000 Pasco-Kennewick bridge which is being erected over the Columbia River by the Inter-County Bridge Company of Walla Walla. The bridge when completed will



B. D. DEAN

be one of the most imposing in the Northwest. Mr. Dean is vice-president of the Seattle section of the American Society of Civil Engineers, a member of the Engineers' Club and state adjutant of the Veterans of the Foreign Wars. He is the possessor of a brilliant war record, having served with the United States Army Engineers overseas for eighteen months with the rank of a captain and distinguishing himself in the Meuse-Argonne offensive.

W. A. Roper, **C. H. Elliott**, **M. W. Bailey** and **W. J. Laufenburg**, all employees of Denver electrical firms, were awarded prizes for obtaining new members in the contest recently held by the Denver Motor Club, of which **W. J. Barker**, the general manager of The Denver Gas and Electric Light Company, is president.

J. J. Cooper, **J. W. Ryall** and **J. C. Davidson**, representing three of the largest electrical jobbers in Denver, attended the national convention of the jobbers' association in Cleveland.

E. M. Cutting, known to the electrical industry of the West as "Uncle Ed" through his former connection with the Edison Storage Battery Company, has added the field of real estate to his present activities as a representative for the Franklin Motor Car Company in Los Angeles.

Martin J. Insull of the Middle West Utility Company of Chicago, was a guest of the Rocky Mountain division of the N. E. L. A. committee on public utility information at luncheon in Denver November 29. He later made an address to the students at the Colorado School of Mines at Golden, Colorado, through arrangements of **E. A. Phinney**, general manager of the Jefferson County Power and Light Company at that place.

C. G. Kozett, former assistant engineer in the mechanical and electrical department of the Panama-Pacific Exposition and later holder of the same position with the Department of Engineering for the state of California, has been appointed chief draftsman for the Seattle school department. Mr. Kozett is a graduate of the College of Mechanics of the University of California with the class of 1908. Seattle at the present time is undertaking a \$4,000,000 school building program.

E. W. Crane, California engineer who has been directing hydroelectric development in Mexico and Cuba since 1900, has returned to Los Angeles, where he has opened offices as consulting engineer with **Harry G. Holabird** under the name of Crane and Holabird. Mr. Crane, who was a member of the class of 1895 at Stanford University, has been identified with some of the major power developments of the southern republic during the most progressive years of its growth. Mr. Holabird will still continue as representative for the Ohio Brass Company for Southern California.

L. W. Fay, former advertising manager for the Century Electric Company of St. Louis, Mo., has accepted a position in the publicity department of the Pacific Gas and Electric Company in San Francisco. He succeeds **D. H. Roundtree** who has resigned.

D. W. Murphy, Los Angeles engineer, has been appointed consulting engineer on the drainage work for the Imperial Valley irrigation work. For many years an engineer with the U. S. Reclamation Service, Mr. Murphy has contributed much original research on the subject of drainage as applied to the irrigated lands of the West. The inability to control the ground water level has seriously interfered with the growing of crops in the Imperial Valley, and Mr. Murphy is expected to solve the problem as efficiently as he did in the Salt River Valley several years ago.

Obituary

William Maxwell Wood, assistant general manager of the Pacific Power and Light Company, died in Portland on November 4 of blood poisoning. Born at Vancouver Barracks, Washington, on January 23, 1884, he was educated in Portland, having been graduated from the Portland Academy in



W. M. WOOD

1902. After studying for a short time in Germany he entered Cornell University and was graduated as an electrical engineer with the class of 1908. With the exception of a short period, Mr. Wood has been with the Pacific Power and Light Company continuously since his graduation, having served as purchasing agent, local manager at Sunnyside, Washington, district manager at Lewiston, Idaho, and finally as assistant general manager. His pleasing personality caused him to be one of the most popular men in the electrical profession in the Northwest. He was an expert mathematician with a very wide knowledge of the application of mathematics to economic, rate interest, depreciation and annuity problems. He was in charge of personnel work, and rate and tariff questions. He is survived by a widow and three small sons.

Gustavus O. Newman, chief engineer for the San Joaquin Light and Power Corporation and the Midland Counties Public Utility Service, died at his home in Los Angeles recently, bringing to a close a career of over fifty years as an engineer in this country. Born in Sweden in 1844, and educated in the schools of that country, he came to the United States in 1868. He is credited with the construction of the first concrete bridge in this country, having imported the cement from Germany. He was one of the pioneer irrigation engineers in the West and had been with the U. S. Geological Survey and the Central Pacific and Southern Pacific railroads. His connection with hydroelectric development began with the San Gabriel Electric Company in 1897. He is survived by a widow, a daughter and three sons. His passing is not only a loss to his company, but to the engineering profession of the entire West.

James Crilly, Pacific Coast representative for the Habirshaw Electric Cable Company, Yonkers, N. Y., has returned to his San Francisco offices after an extended visit in the East.

H. J. Dansdill, representing The Luminous Unit Company, and specializing in Brascolites, has taken charge of sales in Kansas and Nebraska and as a result moved his office from Denver to Omaha.

H. Alex Hibbard, Inc., of Denver has taken on several lines of automotive accessories for distribution between the Rocky Mountains and the Pacific Coast.

E. E. Aldous of the Denver branch has been appointed manager of the St. Paul office of The American Steel and Wire Co.

A display of all small heating appliances manufactured by the Westinghouse Company was recently conducted in Denver for the benefit of the electricians in that city by Carl H. Heintz, western sales supervisor.

Ralph B. Clapp of Clapp and La Moree, Los Angeles, recently visited in Denver in order to establish connections with his firm for the distribution of California made goods.

One of the most interesting windows recently displayed in Denver is that of Scott Bros., showing perpetual pouring of coffee from a percolator held by a life-size model. A. R. Woolley of the Edison Electric Appliance Co., Salt Lake City, made the installation.

The National X-Ray Reflector Company is emphasizing the electrical Christmas idea in a campaign to have every municipal outdoor Christmas tree in the country this year lighted with floodlighting projectors.

The Pueblo Battery Manufacturing Co., with temporary offices at 85 Opera House Bldg., Pueblo, Colo., has been organized to manufacture all types of storage batteries.

Clapp and LaMoree, engineers and sales representatives of Los Angeles, have opened a branch office at 589 Howard Street, San Francisco. S. E. Dunn will have charge of the Northern California branch which will handle material ranging from tools to telephone, signal and substation apparatus.

J. F. Roche, manager of the sales promotion department of the Edison Electric Appliance Company, Chicago, is making a tour of the Pacific Coast. His itinerary will include Los Angeles, San Francisco, Portland, Seattle, Spokane and Salt Lake City. He is inspecting the Edison service stations which are located in each of these cities.

The O. B. Kibble Engineering Corporation has been organized in Los Angeles to succeed the Humphrey Engineering Construction Company. No changes in the personnel of the parent company are contemplated. On December 1 the firm occupied new and larger quarters in the Union Oil Building in the Southern California metropolis.

The Western Electric Company has instituted a sales contest among its vacuum sweeper salesmen, the prize for which will be a trip to the company's manufacturing plant in Worcester and a half-week enjoying the sights and sensations of New York City. The company has divided the country into three districts and one salesman will be sent from each.

Manufacturer, Dealer, and Jobber Activities

The American Ironing Machine Company has closed its Denver office in the Empire Building, although a representative is still maintained in that city.

Allen's Electric Appliance Co. is the name of a company recently organized at Fort Lupton, Colo., under the management of Edwin Lewis.

Charles Clifford has opened an electrical appliance store in the Christensen Building, Bingham, Utah.

The Alden Electric Appliance Company of Fort Lupton, Colo., has been incorporated with a capital stock of \$150,000 by J. B. Alden of Brighton, Dr. Edwin Lewis, Jesse M. McKay, S. J. Camenger and G. B. Lewis of Fort Lupton. The purpose of the company is for the manufacture and sale of electrical appliances and machinery.

J. G. Lengel, manufacturers' agent of Los Angeles, has returned to his western headquarters after a four months' tour of the East. Mr. Lengel announces that he has been appointed western distributor for the Max Schaffer Company of New York City, manufacturers of illuminating glassware, portable lamps, floor lamps and lighting fixtures.

The F. E. Newbery Electric Company has opened a new and modern store at 359 Sutter Street, San Francisco. The store is unique in that it is merchandising a well known line of phonographs and records jointly with a full line of household appliances, fixtures and wiring devices.

The Trumbull Electric Manufacturing Company has announced a reduction in prices ranging from 10 to 15 per cent on open knife switches, and slate and porcelain fuse blocks.

The Shepard Electric Crane and Hoist Company, Montour Falls, N. Y., has announced the placing on the market of the Liftabout, a small general utility hoist designed for every load-moving job. The new device fills a long-felt want in addition to providing an economical and labor-saving mechanical means of lifting and carrying a multiplicity of loads.

The Westinghouse Electric and Manufacturing Company has recently placed on the market a new chocolate warmer designed for use in candy factories. The device consists of a sheet metal warming pan, containing a hermetically sealed retaining vessel which covers the heating element, with a re-heat snap switch and six feet of flexible cord.

The American Wiremold Company of Hartford, Conn., has opened a New York district sales office at 71 West 23rd Street, New York City, under the direction of H. B. Kirkland, vice-president of the company.

The American Insulated Wire and Cable Company, Chicago, has completed arrangements for the distribution of its "American Brand" leather-bound vest pocket catalog and encyclopedia on wire and cable. The catalog will be distributed to anyone requesting it.

The Ajax Electrical Specialty Company, St. Louis, has brought out two new types of plural socket plugs, literature on which is now available.

The Automatic Electric Heater Company, Warren, Pa., manufacturer of Sepco water heaters, has issued a valuable sales manual containing figures on the amount of hot water used by an average family, the temperature that should be maintained and the cost of hot water consumed in residences of various sizes, all based on an investigation of several thousand actual cases.

The Torrington Company, Torrington, Conn., has reported that shipments of vacuum cleaners are exceeding by 200 per cent the shipments for the same period of 1920. The company has announced that the time limit on its special offer of a set of attachments free with each cleaner sold has been extended to December 31.

The Westinghouse Electric & Manufacturing Company announces the following changes in its service department: B. B. Burkett has been appointed district service manager in the Seattle office, succeeding N. P. Wilson, who has been transferred to sales service activities on switchboards and similar apparatus in the Seattle territory. The Salt Lake service department has been made a branch of the Denver office, under the direction of A. F. Maccallum, district service manager, Denver. M. R. Davis, formerly district service manager at Salt Lake, will remain at Salt Lake and devote his time to field service work and to securing repair business for both shops.

The Edison Electric Appliance Company, through its Salt Lake City office, will conduct a special selling campaign with the Western Light and Power Company at its northern Colorado properties early this month.

The Sechrist Manufacturing Company of Denver, which specializes in all types of lighting fixtures, has developed and patented a 660-watt electric pressure cooker which will be introduced on the market early next year.



DRIVER, BRASSIE, MASHIE AND PUTTER

We offer representatives of all four branches of the electrical industry on the Pacific Coast in one group, showing the same cooperation in chasing the little white pellet as they do in watching the gyrations of the white cubes or in their meetings. We make no attempt to pick the "Jock Hutchinson" from this crowd for a bitter argument might result. Left to right, the exponents of the Scotch game (?) are: A. W. Childs, superintendent of sales, Southern California Edison Company; R. M. Alvord, manager, supply department, General Electric Company, San Francisco; D. E. Harris, vice-president and general manager, Pacific States Electric Company, and G. E. Arbogast, manager of the F. E. Newbery Electric Company, Los Angeles. Or they might be dubbed central station, manufacturer, jobber and contractor dealer.

Business Outlook in Western Market Centers

Reflecting the Trend of Community Thought on Conditions and Events Affecting Business and Industrial Activities Throughout the West

Compiled and edited for the Journal of Electricity and Western Industry by correspondents in all principal Western cities.

BUILDING PERMITS AND BANK CLEARINGS FOR NOVEMBER IN 7 WESTERN CITIES

	No. of Permits	Value	Bank Clearings
San Francisco	613	\$2,224,606	\$573,700,000
Los Angeles	4,242	8,685,775	376,010,000
Spokane	183	118,205	45,026,000
Seattle	735	593,800	128,739,000
Portland	1,082	1,374,615	128,828,000
Salt Lake City	157	385,876	62,568,000
Denver	490	981,600	146,168,000

SAN FRANCISCO

Leading retail stores report some increase in business, but trade with wholesale dealers and manufacturers continues very quiet, and there is no appreciable reduction in the number of unemployed. Building operations are active, however, and trade in hardware and building supplies has improved. A feeling of confidence prevails, and a large holiday distribution is anticipated. Recent rains have been very beneficial in the farming section. Collections continue slow.

Considerable tonnage of dried fruit has been exported to Europe, and payments for deliveries of dried fruit have been made to growers by several co-operative associations in California.

PORTLAND

Business has completely recovered from the reverses caused by the sleet storm of a few weeks ago and holiday buying is now on in full swing. Bank clearings, building permits, and shipping were very good for November although they did not measure up to the months of October and September. Owing to financial and credit conditions jobbing business does not equal the volume of a year ago. Retail buying is slightly below normal. Conditions in the lumber industry remain good although production is still about 15 per cent below normal. There is a scarcity of logs and all-winter operation of logging camps on the Columbia river is expected. There is a shortage of experienced men but common labor is plentiful.

Electrical contracting business is good and there exists a shortage of journeymen wiremen. Jobbers and retailers' stocks are in good shape and a fair volume of holiday business is expected.

LOS ANGELES

While the motion picture industry continues to mark time as it has done for the past year, there is indication that an upward trend will begin with the first of the new year and many permanent improvements are being made on studio property.

The oil industry shows continuous growth and stored stocks are increasing. The total storage of petroleum in the state which is estimated to be in excess of 30,000,000 barrels, is double that of 1920 for the same month. New fields south of this city are developing rapidly. The gravity of the oil in this section promises to be higher than the average.

Value of building permits for eleven months of 1921 total \$73,904,000. More than 240 new subdivisions, double the number in 1920, have been opened to date.

Retail sales in electrical merchandising are reported as fair with some lines better than last year. Those engaged in general mercantile business seem well satisfied with the sales of November and look for good Christmas trade. Collections are reported good.

The Walnut Growers' Association recently distributed the last payment due the growers, amounting to \$2,000,000 and representing a satisfactory season.

SALT LAKE CITY

While business conditions in the inter-mountain section have not improved materially, and while there seems to be no immediate prospect for resumption of anything like normal conditions, there are several factors which give promise of relief. One of the most encouraging is the improvement in conditions in the copper market. If this improvement continues, at a fairly reasonable rate, it is very likely that there will be an early resumption of operations by the copper mining companies.

The output of silver and lead ores is being maintained at a rate which is very nearly normal in many of the mining camps where such metals predominate.

The farmers and livestock men are looking forward to relief in the form of government loans in the near future, which will materially relieve the situation in the agricultural districts.

More than \$3,000,000 will be paid to farmers of Utah and Idaho for sugar beets delivered between November 1 and December 1 by the various sugar companies, the final payments to be made about December 15.

There has been no improvement in the unemployment situation, and in fact the number of unemployed has in-

creased due to cessation of harvesting activities. However, conditions in this respect are not nearly so acute in the intermountain section as in some other sections of the country.

DENVER

General business conditions here are as good if not better than in any other part of the Tenth Federal Reserve District. A slight improvement is indicated in trade and it is expected that the new year will mark a sharp up-trend.

Although grain movements decreased in November, the production of flour increased 50 per cent over last year's mark. Cattle shipments were greater and packing interests are holding their own. While petroleum production has been speeded up due to the increase in the price of crude oil, coal mining is showing a production of half capacity.

Building operations are benefiting from the weather with the result that November records show little if any decline, especially in the construction of small dwellings.

Jobbers report increased holiday activity with small sales of standard merchandise. This is especially true in electrical lines where it appears many dealers waited until the first of December to place orders. A special co-operative advertising campaign is materially boosting retail appliance sales.

Sharp reductions in prices by department stores after Thanksgiving included a few electrical items. An overstocked condition is believed responsible as sales did not materialize from inquiries as rapidly as was anticipated.

SEATTLE

Further increases in the shipments of lumber from the Northwest by water is reported by the West Coast Lumbermen's Association, which also predicts further increases in the prices of lumber, because of an unprecedented dearth of logs, shortage of stocks in yards and car shortage, which will necessarily become more acute in the spring. The log shortage has been aggravated by storm conditions of the past two weeks, which cut the Oregon log output fifty per cent, and the Washington output fully forty per cent. In the Northwest, ordinarily, weather conditions force a cessation of woods operation from middle of December to middle of February.

An indication of increasing strength in marine trade out of Seattle is the fact that previous records of the city's intercoastal trade were broken in the month of November, when the total of 179,852 net tons were handled.

Retail trade in Seattle is beginning to show a marked effect of holiday buying, and dealers predict a fairly satisfactory showing for the holiday season.

Construction News and Industrial Developments

Suggesting to the Engineer, Contractor, Manufacturer, Dealer, Agent and
All Business Men Opportunities for New Business

THE PACIFIC NORTHWEST

SEATTLE, WASH.—The Camas substation of the Northwestern Electric Co. was destroyed by fire recently. The loss is \$75,000.

NEWPORT, WASH.—Application of the Kallispell Light and Power Co. for a franchise to erect a power transmission line along county roads and streets has been granted.

SPOKANE, WASH.—A desirable municipal power site is wanted by city officials who plan to hold it for the future needs of the city. Search will be made for a suitable site shortly after Jan. 1st.

SPOKANE, WASH.—The Adam Brown Packing Co. has commissioned Morrison and Stimson, architects, to prepare plans for a three-story, 188 ft. by 74 ft. packing plant to be erected here at a cost of \$100,000.

CAMAS, WASH.—The sub-station of the Northwestern Electric Company was totally destroyed by fire recently entailing a loss of \$75,000. S. E. Carlton, local manager for the company, announces that the station will be immediately rebuilt.

YAKIMA, WASH.—N. H. Medbury, inventor of an automatic hot water injector and wrench pump for irrigation, has announced that he will immediately form a \$500,000 corporation and erect a \$100,000 plant for the manufacture of the pump. W. F. Miller of Yakima will head the company as president.

TACOMA, WASH.—The Carstens Packing Company has prepared plans for the first of four new buildings to be added to the Tacoma plant. The proposed structure will be 180 ft. by 120 ft., four stories high, and will cost \$300,000. It will be used for a tank room and fertilizer warehouse.

SEATTLE, WASH.—The Todd Drydocks plan the immediate expenditure of \$175,000 for the construction of the fifth unit of a floating drydock now in use at Harbor Island, where the company's plant is located. When completed the drydock will have a lifting capacity of 15,000 tons.

SEATTLE, WASH.—Plans and specifications for a seawall and dock to be built at the Puget Sound Navy Yard at Bremerton are practically ready, according to word from Washington. Bids will be called for shortly after the first of the year. The work involves an expenditure of \$1,100,000.

RAYMOND, WASH.—Plans and specifications for a new bridge to span the Willapa River at the site of the present structure have been completed. The structure will be of steel with perpendicular draw, affording a 125-ft. passageway for ships. It will have a 20-ft. roadway with sidewalks on each side. The cost of construction is estimated at \$175,000.

VANCOUVER, WASH.—The Britannia Mining and Smelting Company has authorized the rebuilding of a large ore concentrator and mill near Britannia Beach. The mill will have a capacity of 2500 tons, making this the largest copper mill in British Columbia. The equipment will include 18 tube mills and five rolls. The work is estimated to cost \$1,000,000.

TACOMA, WASH.—The Tacoma Port Commission has set December 29 as the final day for submitting bids for the construction of the new transit shed on pier No. 2. Plans prepared under the direction of G. W. Osgood, manager of chief engineer for the commission, call for

a structure 1040 ft. long and 180 ft. wide of reinforced concrete and tile.

SEATTLE, WASH.—Plans for a thirteen-story \$1,000,000 addition to the New York block in Seattle, owned by the Dexter-Horton Estate, have been completed and work of construction will begin shortly after the first of the year. The building will be of granite, brick and terra cotta. Plans were prepared by John Graham, architect, L. C. Smith Building.

THE INTERMOUNTAIN DISTRICT

ESCALANTE, UTAH.—Escalante has voted a bond issue for the purpose of purchasing the light and power plant in that city and making it a municipal plant.

LEADVILLE, COLO.—The American Smelter and Refining Company has authorized the construction of a new mill and concentration plant on the Yak properties.

GLENWOOD SPRINGS, COLO.—The local central station has broken ground for a new store building which will house the offices, salesrooms and wiring shop.

CANON CITY, COLO.—Excavation has been started on the new Williamsburg high school which when completed will cost \$20,000, according to B. A. Burton, the superintendent.

SALT LAKE CITY, UTAH.—The Silver King Consolidated Mining Co. of Park City, Utah, whose smelter was burned about a year ago, is planning to rebuild in the near future.

DENVER, COLO.—The shops and warehouses of the Denver Tramway Company are to be enlarged. An addition and various other improvements to the building costing \$25,000 will be undertaken shortly.

BOULDER, COLO.—The most expensive college fraternity house at the University of Colorado will be that of the Chi Psi fraternity. It will cost over \$60,000 according to the contractor, Frank Kirchoff of Denver.

BONNERS FERRY, IDA.—The Great Northern Railway Co. is planning the construction of new bridges and trestles on the Kootenai Valley Railway, a branch line running from Bonners Ferry to Porthill, a distance of 38 miles.

SALT LAKE CITY, UTAH.—The city recorder has been authorized to advertise for bids for the construction of a 10,000,000-gallon emergency reservoir at Sunnyside Avenue and the Parley's line conduit. The approximate cost will be \$25,000.

DENVER, COLO.—Colorado Consistory of the Scottish Rite Masons have voted to erect a \$500,000 cathedral on property already owned by that organization, facing the state capitol building. Charles A. Stokes is the chairman of the building committee.

DENVER, COLO.—The local chapter of the American Society of Civil Engineers has drawn plans for the construction of an Engineers' Building to house its own members, architects, and allied lines. It will be ten stories high and the estimated cost is \$290,000.

DENVER, COLO.—The Fontius Shoe Co., one of the oldest retail shoe firms in this city, is planning on taking part in the "up-town movement" as is shown by its decision to construct a new store building at 16th and Welton Sts., which will cost about \$150,000, according to Harry E. Fontius.

DENVER, COLO.—As the result of the Broadway extension, a new commercial center is developing northwest of the main business section and in this territory one of the latest type garages, sales and service stations will be constructed by The Kempter Bros. Motor Co. of this city at an estimated cost of \$85,000.

MALAD, IDA.—Representatives of Canyon, Gem, Payette, Washington, Malheur and Owyhee counties have agreed upon the essential details to govern the formation of a livestock loan company to operate in southwestern Idaho. The name of the company will probably be the Farmers' Livestock Loan Company. It is to have an authorized capital of \$200,000, at least \$20,000 of which is to be paid in immediately.

OGDEN, UTAH.—Factories of the Amalgamated Sugar Company in Utah and Idaho will operate on sugar beets until the latter part of January. The sugar beet harvest which started in September has been completed in both states and all of the beets have been delivered to the various factories. It is estimated that more than 650,000 tons of beets have been hauled to the company plants in the two states this season, which is 70,000 tons more than the 1920 record.

BOULDER, COLO.—Ground has been broken for the new \$430,000 gymnasium that is to be erected on the University of Colorado campus on the location of the old S. A. T. C. barracks. A contract for the removal of 4,000 square yards of dirt has been awarded and the company in charge expects to complete this task within two weeks. The university stone quarries are being worked and sand is being hauled onto the ground, so that concrete work can begin this coming month if weather conditions are favorable.

THE PACIFIC CENTRAL DISTRICT

HEROULT, CAL.—The electrical iron smelter of the Noble Electric Steel Co. will be purchased in the near future, it is reported, by a steel company headed by W. E. Creed.

BERKELEY, CAL.—The J. & E. Battery Co. of Philadelphia is contemplating the erection of a \$250,000 plant on the Berkeley waterfront if a satisfactory location can be secured. H. E. Robinson is president of the company.

EUREKA, CAL.—Construction on the community owned \$300,000 Redwood Inn will be started at once. The Eureka Chamber of Commerce has placed itself on record for an open shop plan of employment in the construction of the hotel.

SAN FRANCISCO, CAL.—A four-story and basement reinforced concrete building will be erected on First Street, south of Mission, this city, by Luke Fay. The building will be completed early next year and will be occupied by the dry goods firm of Coppel Bros.

FRESNO, CAL.—Architect H. R. Lake of San Francisco and R. F. Flechlin of this city are collaborating on the plans for a 10-story hotel to be erected at Inyo and J Streets for the Sun Maid Hotel Corporation. The financing is to be done locally by subscription.

STOCKTON, CAL.—A modern fruit packing shed will be erected by the T. H. Peppers Fruit Co. at Lodi, to cost \$20,000. A. E. Erb is local manager. The American Fruit Growers are also planning the erection of a new packing shed in So. Lodi. J. Prontico is local manager.

FRESNO, CAL.—The Brix estate expects to build a 6-story office building on their property on J Street in the near future. The plans have been prepared by Eugene Mathewson, architect, who says the estimated cost is \$350,000 and the structure will be one of the most attractive buildings in Fresno.

EUREKA, CAL.—All revenue above operating costs on the Eureka Street Railway will be turned back immediately into improvements and reconstruction, according to a statement recently made by Councilman H. Gross. A converter of larger capacity than that now used will be one of the first purchases made.

CHICO, CAL.—Construction work will start soon on a \$60,000 distributing plant for the Shell Oil Co. on the Thomasson ranch near Chico. Present plans call for a water plant, wells and pumps. Arrangements have been made with the Pacific Gas & Electric Co. for a power line to the site. C. M. Carson is chief engineer of the Shell Co.

SAN FRANCISCO, CAL.—Contract for the new industrial home of the Salvation Army has been awarded and work will start in the near future. The building will be located on the site of the old home on Harrison Street and will contain a store, paint and cabinet shop, machine shop, etc. Brig. Reed is in charge of the home.

OAKLAND, CAL.—The Hutchinson Company, through A. C. Blumenthal & Co., has sold to a San Francisco syndicate comprising Dunn-Williams Co., MacDonald & Kahn and A. C. Blumenthal, a lot on the east side of Broadway near Seventeenth St. The purchasers contemplate the erection of a four-story store and office building to cost approximately \$75,000.

FRESNO, CAL.—The Mendota Irrigation District, organized last month, has filed with the state division of water rights an application for diverting water from the Kings River, near Fresno, for the irrigation of 70,000 acres of land in Kern county. It is proposed to divert 2500 cu. ft. of water per second for the generation of 10,000 hp. to be used in the pumping plant.

SACRAMENTO, CAL.—Weeks & Day, architects, have prepared plans and specifications for an 18-story bank and office building to be erected at Seventh and K Streets for the Sacramento-San Joaquin Bank. The building was first planned about two years ago but due to wartime cost of building material and labor the plans were laid aside awaiting more favorable conditions.

SACRAMENTO, CAL.—Advertisements for bids for the entire superstructure of the Capitol Extension Buildings to be erected on the blocks, Ninth and Tenth, L and N Streets, have been authorized by the State Building Commission. The work on which bids are asked includes excavation, piling, concrete work, granite, terra cotta and brick and an alternate bid on manufactured granite and steel.

OAKLAND, CAL.—Harry W. Fawke, superintendent of hull construction of the Moore Shipbuilding Co. for the past 12 years, has purchased the Stockton Iron Works of Stockton. He is planning the construction of an additional plant for the purpose of doing a general ship repair business as well as structural work. He is associated with Edward McCarley and the firm will be known as the Terminal Iron Works.

RIVERBANK, CAL.—M. J. Chamberlain, of the Santa Fe Ry., Los Angeles, has contracted with the Riverbank Water Co. for water necessary for the construction of the new \$250,000 ice plant on which work will be started immediately. Several miles of new track will be laid by the railway company which has appropriated \$35,000 for that purpose. It is believed that the requirements of the ice plant will make it necessary for the water company to enlarge its plant.

THE PACIFIC SOUTHWEST

SAN PEDRO, CAL.—The Pacific Mail Co. is planning the erection of a \$400,000 terminal.

MIAMI, ARIZ.—Bids for the construction of the proposed Globe post office will be again called for in the near future.

BANNING, CAL.—The Southwestern Home Telephone Co. will erect an office building on lots purchased on San Geronio Street adjoining the Alta Vista Hotel block.

LOS ANGELES, CAL.—A hotel of concrete construction, containing store-rooms, lobby and restaurant, will be erected at Los Angeles Harbor at a cost of approximately \$200,000.

LONG BEACH, CAL.—Work will begin this month on the 6-story Drake-Porterfield Building, Pine Avenue Pier and Union Pacific Rail Station, to cost between \$150,000 and \$200,000.

POMONA, CAL.—The city has received bids for a small addition to its ornamental lighting system. The new posts are to be installed on Randolph Street between Park and Wisconsin.

LONG BEACH, CAL.—Wallace, Bush & Skidmore, Los Angeles, have been awarded the contract for the erection of the Sovereign Apartments, Ocean and Chestnut Sts., price \$500,000.

HOLLYWOOD, CAL.—C. H. Pill will erect a theater costing \$250,000 at Hollywood and Vermont Avenues. The building will be two stories high and will have a seating capacity of 1200.

LONG BEACH, CAL.—The Kimball Motors Co., M. C. O. Hull, president, announces that work will begin soon on a factory to be erected on West Anaheim Boulevard, at a cost of \$100,000.

EL CENTRO, CAL.—The Imperial Valley Irrigation District has set aside the sum of \$250,000 to be used under the direction of Daniel W. Murphy in the construction of drainage works.

TUCSON, ARIZ.—The Southern Methodist Church has purchased a tract of land at the corner of Euclid Avenue and 3rd Street, where the erection of a church building to cost \$150,000 is contemplated.

SAN BERNARDINO, CAL.—Howard E. Jones, architect, announces plans for complete alteration of the interior of the San Bernardino National and San Bernardino County Savings Bank to cost \$65,000.

LOS ANGELES, CAL.—Construction of the Los Angeles Harbor Immigration Station will be started after removal of submarine base buildings from the site at 22nd Street. The work will cost \$80,000.

TUCSON, ARIZ.—A sanitarium for disabled locomotive firemen and engine men will be erected here by the National Brotherhood of Railroad Firemen and Engineers. The cost is estimated at \$3,000,000.

LOS ANGELES, CAL.—It is rumored that the Farmers and Merchants National Bank is looking for a suitable location to buy and build for themselves a first-class bank and office building for their exclusive use.

CORONADO, CAL.—Louis J. Gill has prepared plans for the erection of a four-story apartment house that will contain more than 100 rooms. Sheridan B. Fry is the owner and the estimated expense is around \$250,000.

BURBANK, CAL.—A 21-room apartment house will be erected by Carpenter Bros. for O. B. Cummings at 233 Santa Anita Ave. The permit calls for the expenditure of \$25,000. The work will be started at once because of the shortage in housing facilities.

WHIPPLE BARRACKS, ARIZ.—The contract for the U. S. P. H. Service Hospital was awarded to the firm of William Simpson Construction Company of Los Angeles at a figure of \$189,995, not including the mechanical equipment. This is said to be the second time this contract was let due to an error in the first bidding.

LOS ANGELES, CAL.—The Baker Iron Works held low bid for the structural steel in the large garage building to be erected on Los Angeles and Washington Streets for Henry M. Owen. Albert C. Martin is the architect.

TUSTIN, CAL.—Farm Center community has formulated a plan for a cooperative cold storage plant to provide facilities for the proper storing of the crops in the immediate vicinity. It is proposed to invest \$25,000 in the project.

LONG BEACH, CAL.—The Red Seal Refining Co., capitalized at \$1,500,000, will build a plant in the industrial district on West Anaheim Boulevard, costing \$600,000. Chas. H. Gifford is president, with offices at 243 E. Ocean Boulevard.

LOS ANGELES, CAL.—C. A. Griffin, secretary of A. G. Blumenthal & Co., lessees of Loew's State Building, announces that the company is planning the construction of seven large buildings on prominent corners here, to cost approximately \$11,000,000.

LOS ANGELES, CAL.—The Community Development Association, owner, John & Donald Parkinson, architects, are planning the erection of a reinforced Coliseum Building at Exposition Park, to cost \$772,000. Edwards, Wildey & Dixon are the contractors.

ALHAMBRA, CAL.—A five-story hotel building, containing 125 rooms, will be erected at Main Street and Wilson Avenue, according to recent announcement by the Alhambra Chamber of Commerce. Architect's floor plan and drawings have been submitted.

LOS ANGELES, CAL.—The property of Arthur Letts at the corner of 7th and Hill Sts. has been sold to Dunn Williams and Company of San Francisco. It is reported that the new owners contemplate the erection of a 6-story loft building at an early date.

LOS ANGELES, CAL.—James H. Adams will erect a 10-story and basement Class A building on Olive Street near 8th. Richard D. King is the architect. The Southern California Telephone Co. will occupy the building and will install office partitions and fixtures.

VENTURA, CAL.—A water application has been filed by Leeds and Barnard of Los Angeles to irrigate 4,500 acres with water from the North Fork of the Ventura River. Application also requests the appropriation of a dam site to impound 5,000 acre-feet per annum.

PASADENA, CAL.—The contract for the refrigeration equipment in the addition to the Pasadena Hospital was awarded to the Bedell Engineering Co. of Los Angeles. The figure was approximately \$15,000. H. H. Walker was low bidder on the electrical work at \$9,200.

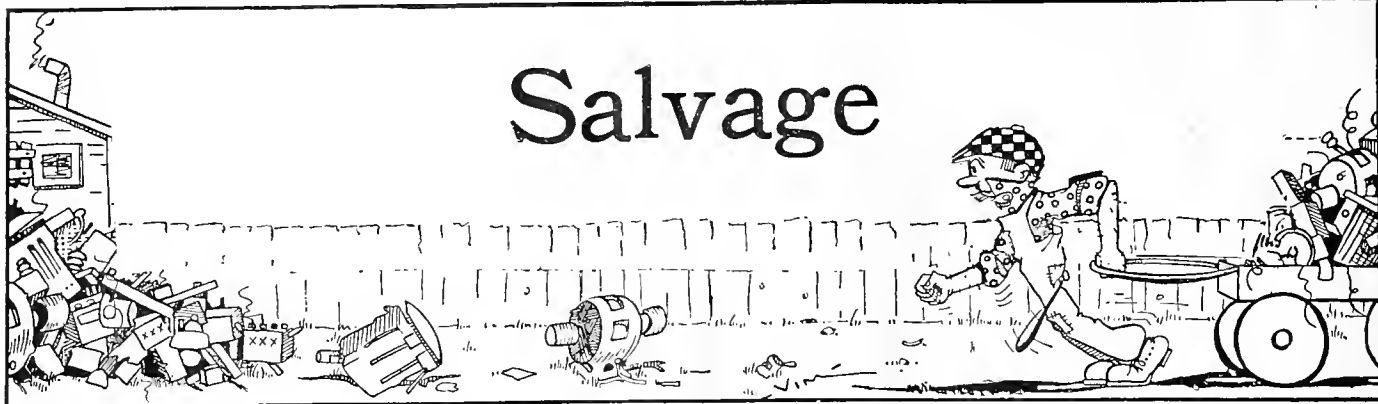
SAN DIEGO, CAL.—The permit for the first of three large apartments has been secured in the name of James E. Collumb, owner and builder. The cost is given as \$200,000 and there will be fifty-three apartments of two and three rooms each. Eugene M. Hoffman is the architect.

FRESNO, CAL.—The local lodge of the B. P. O. E. has launched its plans for a magnificent club house to cost not less than \$300,000 including furnishings, and have started their committees on the financing campaign to put it over. Details of the plans will be announced shortly.

FRESNO, CAL.—The merger of the Fidelity Trust and Savings Bank with the Los Angeles Trust and Savings Bank will give Fresno better financial support, but the new bank officials have announced that a start will be made at once on a new bank and office building to cost \$300,000.

SANTA MONICA, CAL.—This city will have a big addition to the pleasure piers in the way of a \$1,500,000 enterprise, if the plans of Lycurgus Lindsay are approved by the city council. It is proposed to build the pier at the foot of Hollister Avenue, extending into the ocean one-fourth mile, and to be 400 feet wide.

Salvage



Why Lawyers Buy Pierce-Arrows

In these days when each of the three or four hundred government commissions has a compendium of regulations which looks like an encyclopedia—and even skirts are regulated,—it is a wise man who can avoid fine and imprisonment. Business letters of the future will be patterned after the following model communication:

Smith Manufacturing Co., Rochester, N. Y.:

Gentlemen: Referring to your letter [see Postal Regulation, p. 126, 11, 44] of the 28th, we, a corporation organized under the laws of Ohio, certificate filed in the office of the secretary of New York state, New York, beg to advise you that we can quote the price of \$20 [see United States revised statutes, laws of 1914, sec. 18] per ton carload lots [see interstate commerce ruling 256; see also dicta of 128 U. S. 264; Brown vs. Pennsylvania Railroad Company, 168 Pa. 267]. This quotation is special to you [see ruling of department of justice in the matter of Brown Milling Company] and is made subject to our right to claim immunity [see N. Y. Penal Code, p. 48]. If you receive a better quotation from any of our competitors you will, of course, advise us under the authority of the U. S. Revised Statutes, p. 2247, sub. 2. We shall be glad to fill your order [subject to rule laid down in the leading case of Jackson vs. Cobb, 126 U. S. 232] and will ship according to your instructions [see rule 37, New York Public Utility Commission].

Yours very truly,

J. P. JONES.

Can You Beat It?

He bought a bit of butter
For his wife to make some batter,
But the butter it was bitter
And the boarders grew no fatter.

For the bitter butter bought her
Made the bit of batter bitter
When he tried to bite her biscuit
Like a bitter brute he hit her.

So he bet her he could beat her
But he bought her better butter;
Then his wife made better batter
And all bit her biscuits but her.

An Appeal to Salvage Readers

Some time ago the following communication was received in this office, followed a week or so later by another from the original inquirer, solving a portion of the enigma. The one vital question still remains unanswered. Can any of our readers end our sleepless nights by forwarding to us the correct reply? The letters follow:

Messrs:

Oct. 4, 1921

- No. 1—Can personal magnetism be measured?
- No. 2—Can electrical energy in the body be measured?
- No. 3—Can magnetism be conducted over wires and how far?
- No. 4—How far can it be conducted successfully?
- No. 5—What kind of instrument is used to measure magnetism?

Sincerely,

Nov. 16, 1921.

A month later came this:

Dears:

Some time ago we wrote you asking 5 questions in reference to personal magnetism. Since which time we have answered 4 of said questions satisfactorily to ourselves—Nos. 1, 2 and 4 by the affirmative "Yes" and No. 5 by making the instrument to measure it. However No. 3, "What size wire is used to conduct electricity in such small quantity as is

developed in the human system?" is still unanswered. Can you give us, or secure for us an answer to said question and greatly oblige,
Yours very sincerely,

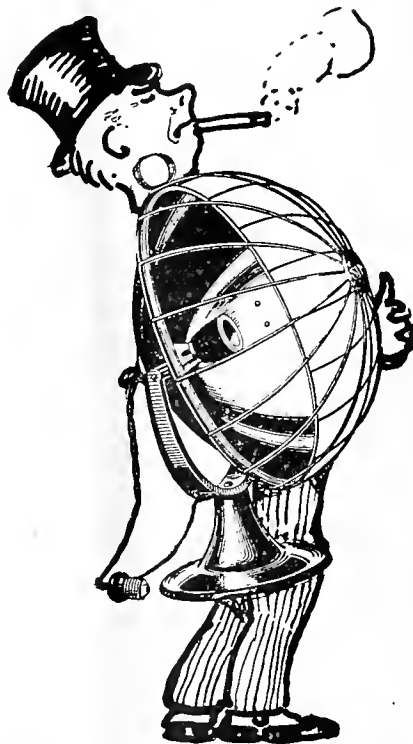
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Municipal Ownership Means Strenuous Days

We learn from "Denkinotomo," published in Tokyo, that in celebration of the taking over of the street railways by the municipality ten years ago, there has been "arranged to have 'Strenuous Day,' lasting a week, during which period the employes were requested to take especial care to avoid any possible danger and other troubles liable to occur on the road." According to Webster's dictionary, strenuous signifies "marked by zealous striving"—and we judge from the further comment in the Japanese press that "the result was claimed to be effective" that the day was successfully stretched to cover the major portion of the week at least.

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ELECTRICAL HYBRIDS



XVIII — The Heating Device President

The new device president sat in the chair
Growing hotter and hotter and hotter.
Though not given to gas, he was known for hot air
And never cooled off till he'd gotter.

His connections had power to keep wires hot;
When the house was old-fashioned, they wired.
That his power was bought, it was whispered a lot—
Yet it is true that he never was fired.

